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Editorial

INDEPENDENT EXPERT MEDICAL EVIDENCE BEFORE CONSUMER COURTS IN MATTERS OF ALLEGED MEDICAL NEGLIGENCE

Complaints against hospitals and doctors are filed in various consumer courts (District Consumer Disputes RedressalFora- CDRF and State & National Consumer Disputes Redressal Commissions- SCDRC/ NCDRC).What amounts to negligence of a professional person is a matter of opinion and judgment. The court does not base its judgment on what the patient or the practitioner concerned has to say, but on the opinions of suitably qualified experts.There often is an element of subjectivity in the orders passed by consumer courts in matters related to alleged medical negligence, if they are based on expert opinions which are not entirely objective. Often these experts disagree about what is the cause of the problem, or about what the practitioner should have done in the circumstances. It is often difficult to decide what the patient's health would have been like if the problem had not occurred. The court tries to work out whether a patient would still have had the treatment if warned of the risks and whether the presenting condition would have impaired his or her future health and independence in any event.

The procedure that is followed in obtaining an expert medical opinion definitely has a great impact on the quality of the opinion of an expert that is submitted to the court.Some matters are referred to the medical expert through the courts. In this situation, the medical expert is approached by the court and not by the parties involved. If the expert is a senior and reputed doctor, one can expect an unbiased opinion in this case. Also, as the opinion is asked by the courts, the medical experts do not deny it. In such a situation, the medical expert relies only on those documents that are forwarded to him by the court.

However, few courts are of the view that the parties to the dispute are supposed to produce the evidence in their favor, the courts are not supposed to create evidence for them. So, they refrain from referring the cases to the medical experts. In such cases the parties to the dispute are forced to search for an expert. Many times the parties do not find any expert willing to opine in their case. Most of the times, the experts are ready to opine only verbally but not willing to give anything in writing. For the defendant doctors it is relatively easy to convince medical experts to provide an affidavit in the matter involved. However, such an opinion cannot be said to be an impartial or unbiased opinion. The courts do not have any control over the documents provided by the defendant doctor to the expert before obtaining the opinion. These opinions are always in favor of the doctors. The situation is worse for the patients, as they do not find any doctor to provide an affidavit or opinion against the defendant doctor.

Frequently, the defendant doctors produce several expert opinions and affidavits in their defense. All are unanimous in their finding that the defendant doctor has acted prudently. These experts are supposed to provide their unbiased opinion based on the medical records maintained by the defendant doctors and not by his oral version narrated to such experts. However, this does not always happen. The value that a doctor adds to the medical records depends heavily on the way in which they are maintained. Certain aspects in which the subjectivity of the doctor is involved during management of the patient including the doctor’s advises, decisions, diagnoses etc should be documented in sufficient detail in order for the peers to know the circumstances in which such decisions were taken and diagnoses were reached. The medical records should also reflect any additional variants that could have influenced the outcome; if at all that is the defense of the defendant doctor. The experts

would then be in a position to judge for themselves the reliability of the records, their value and whether the defense taken by the doctor can be explained from the records or not. If the medical records are not maintained in a way which will enable either the courts or the experts to analyze the facts and circumstances, then any opinion based on such deficient records cannot be relied upon. If any expert claims to give a definite opinion favoring the defendant doctor, based on deficient medical records,then before accepting such an expert opinion, any bias involved in such expert opinion should be ruled out. Expert opinions, though from reputed and senior medical consultants, if based on deficient medical records, will have the effect that the aspect opined upon becomes worthless as it only reflects the subjective opinion of the expert who favors the defendant.

So, either the courts should refrain from seeking expert opinions in case where the medical records presented before them by the defendant doctors are severely deficient (i.e. does not reflect the defense taken by the defendant doctor on the allegations of acts or omissions) or if such a doctor produces such expert opinions and affidavits then they should be scrutinized before accepting as evidence, as to whether the findings observed and conclusions drawn by the expert is based on the medical records or not.

In certain cities, the courts refer the matter to the president of medical council of their state. He decides on the matter and provides his opinion to the courts. Though this appears quite logical, however, it extinguishes the remedy available of an impartial hearing before the state medical council. As per the procedure, after the patient complains to the medical council, the matter is heard by a team of ethical committee members. So, in a particular matter, if the president of that state medical council has already opined in that matter in response to a request by the courts, his opinion will be placed before the ethical committee members of the same council. So, there are chances of a clear bias and any unsatisfied party would have sound reasons to appeal against the decision of such a state medical council.

In certain states the state commissions have circulated the names of some senior and reputed doctors who should be engaged for seeking expert opinions before deciding on the complaints of alleged medical negligence. Opining on the case of alleged medical negligence is a time consuming process. The expert needs to thoroughly scrutinize the voluminous amount of evidence in the form of medical records, textbook and journal references submitted by both the parties to the complaint, analyze the facts in view of the medical knowledge available, and decide on the reasonability aspect of the case before formulating the opinion. All this requires much time. Whether the senior and reputed medical expert can devote time for carrying out the required process before giving the opinion, whether they are trained in the procedure to be followed for providing opinions to the courts, whether they have acquired the knowledge about the consumer law, whether any protocol has been formulated in this regards, whether the opinions of these experts are really unbiased, in how many cases the courts have considered the expert's opinion in deciding on the complaint and whether the district forums are at all referring the matters to these experts, these are some of the questions which have not yet been evaluated.

Need to develop protocols for the medical experts

Though the medical evidence and expert opinions presented in the courts are the tests against which the courts would rate the standard of care and skill of the defendant doctor, ultimately it is for the courts to take the final call. As the final decision is with the courts, in order to avoid any miscarriage of justice by way reliance on affidavits of interested parties, the courts should formulate a protocol while dealing with cases of alleged medical negligence.

1. The courts should formulate the minimum basic criteria about the medical qualification, experience and professional standing of the expert and possession of

basic knowledge about the consumer law and the court procedures. Their willingness to act as experts should be sought. It should be ensured that no case is pending against such an expert before any court of law. The selected experts should be interviewed and a mechanism for their periodic training should be decided upon.

2. The courts themselves should refer the matter for opinion to selected medical experts (rather than asking the parties to seek expert opinions).
3. The following should be put to the experts:
    a. That a precise explanation of each step in the expert's reasoning, methodology or application of principles leading up to each conclusion be given
    b. The factual basis and assumptions used by the expert
    c. The sources of fact basis and assumptions
    d. The reasoning that lead to the conclusion and opinion.
4. The opinions should be sought from at least three independent experts.
5. The parties should also be allowed to submit opinions sought by them from any other medical experts if they wish to do so.
6. The experts providing their opinion in a case before the court should file an affidavit in support of their opinion and they should be available for cross examination (at least on interrogatories).
7. The opinions provided by experts should be supported by standard textbook references.
8. Experts should not assume the role of an advocate.
9. The experts in their opinions should not give their personal opinion on the guilt or innocence of the defendant doctor but should:
    a. Guide the court to a correct decision on questions falling within the expert's specialized field.
    b. Comment on the intricacies of the medical matter before the court and explain and illustrate the research done in that particular field.
    c. Point out the authenticity and reliability of the medical references produced before the courts by the parties to the compliant.
    d. Show to the court to what extent the standard of care and skill adopted in the case under consideration is as per standard methods of practice and to what extent it is not so.
    e. Bring to the notice of the court the different national and international medical viewpoints and schools of thought both for and against the averments raised in the case under consideration.
    f. If any decision/ opinion is to be based on statistical data, then inform to the court whether the statistical data and the principles relied upon, were taken from a study/ target group of people similar to the case under consideration before the court.
10. After the expert provides his opinion on above aspects, only then the court, if satisfied with the authority and contents of such opinion, and that the opinion has some basis or foundation and that it can be linked with facts before the courts, it may
    a. Ask the expert to express his personal opinion in the subject matter (or any particular issue therein) under consideration, if required, or
    b. Study the opinion and decide the case on merit in view of the information before it.

In the US system, the following rules are applied for opinions of medical experts:

1) The common Knowledge rule, where no expert should testify on issues known as common knowledge, or known to the ordinary person.
2) The field of expertise rule, where the expert testifies in the field of which their expertise falls and in the field where they acquire a degree of expertise.
3) The ultimate issue rule, where it is commonly stated that the witness may not be asked to testify about a matter which is an ultimate issue i.e. whether the accused is to be found guilty or the defendant is to be seen as negligent.
4) The basis rule, where the basis of the expert testimony should be shown to the court and made clear to the court.

Thus, the medical experts should not lead or direct the court to speak a particular opinion, but to assist the court to decide on the matter. Information should be presented to the court by medical experts in such a manner for the court to understand the principles and reasoning behind the opinion of the medical expert. This will avoid misleading of the courts due to opinion based evidence and will enable the courts to decide the matters without getting influenced by the medical expert opinion.

Conflicting expert opinion

In many occasions where the plaintiff is medically literate or himself a doctor, they produce opinions of experts favoring their complaint. These opinions contain views that are totally contradictory to the contentions raised in the opinion submitted by the defendant doctors. Both the opinions are supported by standard medical literature. In such cases the decision becomes more difficult. In such circumstances the court has the duty to verify the credentials of the medical experts of the parties, to scrutinize the source and type of information provided to each expert for obtaining their opinion, to study the medical literature produced in support of each expert opinion including its relevance to the matter under consideration.

In some jurisdictions in US, they have decided on a method where the more sensible approach is to determine what is fact and science, and what is opinion and theory, and instead of protecting the jurors from biased experts, establish the nature of the disagreement between the medical experts and assist the jurors to understand the impact of this.

Influence of medical expert opinions on court decisions

Sometimes courts do have a difficult time to rate the actions of the defendant doctor as per the standards of care set by their previous decisions and influenced by the standards expressed by the medical peers.

The standards expressed by medical peers in their expert opinions are generally based on the practices accepted by them or which are customarily regarded as proper as per their existing state of knowledge. However, evidence of accepted practices or customs cannot be used for the creation of a legal standard in matters of medical negligence as this would mean that a profession compiles its own standard of reasonable care. The court may judge certain practices as unreasonable and may find that precautions exist which are so essential that even their universal disregard would not excuse their omission.

The testimony of the experienced members of the profession is of the greatest value in deciding matters of medical negligence; however, the decision of what is reasonable under the circumstances is for the court to decide. It will pay high regard to the views of the profession, but it is not bound to adopt them.A defendant can be held liable despite the support of a body of experts' opinions to the contrary, if that opinion cannot withstand logical analysis and reasoning.

Prof. RS Bangal

Original Article

ICCU OUTCOME WITHIN FIRST 24 HOURS IN PATIENTS OF ACUTE MYOCARDIAL INFARCTION USING APACHE II SCORING SYSTEM

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Dr. MB Chandurkar, Dr. SD Suryavanshi, Dr. S Mandhwa

Abstract

Categorization of patient illness into grades of severity occurs frequently in ICU. Severity of illness scoring systems is important for defining populations of critically ill patients. These scores are helpful for deciding whether a purported benefit of therapy is real, for guidance in hospital administrative policies and allocation of resources such as nursing and ancillary care.

Keywords: APACHE-Acute Physiology & Chronic Health Evaluation
MI- Myocardial infarction

Introduction

Categorization of patient illness into grades of severity occurs frequently in ICU. There are numerous severity of illness scoring systems that have been developed and validated over past two decades. Severity of illness scoring systems is important for defining populations of critically ill patients. These scores are helpful for deciding whether a purported benefit of therapy is real, for guidance in hospital administrative policies and allocation of resources such as nursing and ancillary care.

Currently, the most commonly utilized scoring systems are APACHE (Acute physiology and chronic health evaluation system II & III), SAPS (Simplified Acute physiologic score)and MPM (Mortality predication model). All the severity illness-scoring systems have some common variables. These common threads include age, vital signs, assessment of respiratory, renal and neurologic function and evaluation of chronic medical illness.

Aims & objective

1) To predict ICCU outcome in patients of acute myocardial infarction using APACHE II scoring system
2) To compare the predicted mortality with the actual mortality

APACHE II scoring system is the most commonly used scoring system. It stands for acute physiology and chronic health evaluation. It includes 12 physiologic variables (internal body temperature, mean arterial pressure, HR, RR, Oxygenation, Arterial pH, Sr Na^+, Sr K^+, SrCreatinine, Heamatocrit, WBC count, GCS score), types of ICU admission after elective surgery vsnon surgical or after emergency surgeries, and chronic co-morbid conditions.[2]

All these variables are used to derive APACHE II score. Depending on the score, the value is put in the formula, which after adding diagnostic category weight gives predicted mortality. The data required for collection is simple and the predictive ability of APCAHE II, as compared to APACHE III and SAPS, is good and APACHE II has the best calibration.[3]

Material & methods

This study consists of 70 cases of acute myocardial infarction, studied from December 2003 to March 2005 in ICCU of department of Medicine, IGGMC,Nagpur.

Study design: Prospective validation study.

Inclusion criteria

Consisted 70 cases with typical ischaemic chest pain along with ST segment elevation >1mm in 2 consecutive leads, new or presumably new bundle branch block and/or biochemical markers of myocardial infarction.[1]

Exclusion criteria

1) Patients with old MI
2) Patients with coronary artery bypass graft [4]

APACHE II score was measured on admission and patients were followed for a period till discharge (i.e. 6 days post admission). The ratio of M:F was 2.5:1. The mean age of patients was 54.7+/-/ 10.5 years and maximum patients were in age group of 46-55 years (i.e. n=35 i.e. 38.57%).

Results

13 cases out of 70 died. The mean APACHE score of survivors was 6+/- 2.7 & non-survivors was 14.76 +/- 4.5. The predicted mortality went on increasing parallel to APACHE II score increments. The predicted mortality was compared with actual mortality using test of proportions and was found to be same. 9 patients out of 13 (69.23%) who died were not thrombolysed due to one or the other contraindication.

Table 1: Age incidence:

Sr. no.	Age group (in yrs)	No. of cases	Percentage
1	35-45	14	20
2	46-55	27	38.57
3	56-65	19	27.14
4	66-75	7	10
5	>75	3	4.29

Maximum number of cases were found in age group 46-55 years (38.57%), minimum were in age group of >75 years (4.29%).

Table 2:Age group, mean APACHE II score & mean predicted mortality:

Sr. no.	Age group (in yrs)	Mean score	Mean predicted mortality
1	35-45	7.38	11.48
2	46-55	5.86	10.17
3	56-65	10.26	17.07
4	66-75	10.71	17.24
5	>75	7.33	12.87

Table 3: Distribution of different APACHE scores and number of patients (n=70):

Sr. no.	APACHE Scores	Number of patients	Mean predicted mortality
1	0-5	29	7.06%
2	6-10	27	10.73%
3	11-15	8	21.06%
4	16-20	6	31.15%
	Total	70	

Mean actual and predicted mortality:
Mean predicted mortality: 12.28%

Mean actual mortality: 18.57%
The actual and predicted mortality of all patients (n=70) was compared using test of proportions. The statistical analysis showed no significant difference between actual and predicted mortality i.e. they were the same.

Table 4:APACHE II score ranges and deaths among patients:

Sr. no.	APACHE Scores	Number of patients	Deaths	Percentage
1	0-5	29	1	3.45
2	6-10	27	1	3.70
3	11-15	8	5	62.50
4	16-20	6	6	100
	Total	70	13	

Discussion

The mean APACHE II score of all patients was 7.62+/-4.65 the mean APACHE II score of survivors was 6+/-2.7 and non-survivors was 14.76+/-4.5%.

There was a meaningful correlation between APCHE II scores and the mortality rate for all the patients. The predicted mortality in our study was 12.28%, whereas the actual mortality was 18.57%. The observed mortality was same as the predicted mortality.

The results found were same as those of U Ludwigs, John Hutling et al (2000)[5], who tried to validate APACHE II scoring system in 1,714 patients of acute myocardial infarction. They found that there was a close correlation between observed and predicted mortality in classes of patients with various APACHE II scores.

Chiang HT, Lin SL (2001)[6] found similar results when they prospectively studied 694 patients of acute MI and tried to predict the mortality using APACHE II scoring system.
David T Wong, Sally L Crofts et al (1995)[7] tried to evaluate the predictive ability of APACHE II system for medical and surgical ICU patients in a total number of 1,724 admissions. When the observed death rate was compared with the predicted death rate the linear regression analysis gave r=0.99, i.e. they were same.

The difference between predicted and actual mortality may be explained by many factors i.e. limitations of APACHE II scoring system, difference between the population which validated the study and the population studied, some patient featureslike nutritional, social, ethnic, cultural and economic conditions.

In each successive APCAHE II score interval, the mortality rate was higher than that of the preceding interval.

Increasing APACHE II scores were associated with the increasing mortality. Scores >/= 12 were uniformly associated with death in our study.

The APACHE II score associate with death in our study is less than that observed by others: U Ludwig et al (1995)[5] score>20 were associated with death. Turner JS,Mudliar et al (1991)[8] found that score >30 were associated with death. However Chiang T et al (2001)[6]had different observations and in their study they found that scores >25 were uniformly associated with death. However, in all studies, low score predicted survival and high scores predicted death.

Kappa analysis was used to determine the extent of agreement between APACHE II score and mortality, which showed 81% agreement (excellent).

The predicted mortality was compared with the actual mortality using Test of Proportions and was found to be equal.

Although APACHE II index was not developed for assessing individual prognosis, intensive care unit physicians and medicine, as a whole, have yearned for such predictive ability. It is helpful for clinical decision making or for information to families about survival chances of individual patient.

Conclusion

1) In hospital, mortality can be accurately predicted in patients of acute myocardial infarction using (APACHE) acute physiology II scoring system.
2) APACHE II score in survivors is less as compared to non-survivors.
3) APCHE II score of >12 is uniformly associated with death in our study population **(Kappa analysis showed agreement of 81% which is excellent in statistical terms).**
4) The predicted mortality based on APACHE II score and the actual or the observed mortality was same, as proved by the **Test of Proportions**.

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Original Article

AGE DETERMINATION FROM EPIPHYSEAL UNION OF BONES AT ANKLE JOINT IN GIRLS OF CENTRAL INDIA

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Original Article

AGE DETERMINATION FROM EPIPHYSEAL UNION OF BONES AT ANKLE JOINT IN GIRLS OF CENTRAL INDIA

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Abstract

There is no statistical data to establish variation in epiphyseal fusion in girls in central India population. This significant oversight can lead to exclusion of persons of interest in a forensic investigation. Epiphyseal fusion of the distal tibia and fibula in sixtyeight females was analyzed on radiological basis to assess the range of variation of epiphyseal fusion at each age. In the study the X ray films of the subjects were divided into three groups on the basis of degree of fusion. Firstly, those which were showing No Epiphyseal Fusion (N), secondly those showing Partial Union (PC), and thirdly those showing Complete Fusion (C). Observations made were compared with the previous studies.

Key Words: Epiphyseal Union, Ankle Joint, Distal End of Tibia, Distal End of Fibula

Introduction

[1]. Epiphysis of the bones unites at the particular agewhich are remarkably constant for a particular epiphysis and this is helpful in age determination[1]. In law the crime and punishment is entirely based on criminal responsibility and this in turn depend on the age of a person [2]. Age is helpful in identification of an individual which in turn is helpful in both civil and criminal cases according to Sangma William Bilkey[3]. It has been also stated that the study of epiphyseal union of bones is considered a reasonablyaccurate and accepted method for age determination by the law courts all over the world [4]. As perModi's textbook, owing to variation in climatic, dietetic, hereditary and other factors affecting the people of the different states of India, it cannot be reasonably expected to formulate a uniform standard for the determination of the age of the union of epiphyses for the whole of India [5].Parikh CK conclude that Union of epiphysis in cartilaginous bones takes place earlier in the females by about 2 years than in males except in case of skull sutures where obliteration sets in little later and proceeds more slowly in females than in males and under tropical conditions ossification is observed earlier than in temperate areas [6].Reddy KSN(2009) stated that the bones of human skeleton develop from a number of ossification centers. At eleventh to twelth week of intrauterine life, there are 806 centers of ossification, at birth there are about 450.The adult human skeleton carries only 206 bones [7]. Mehta Homi S (1963) observed that it has been approved by research in our country that the epiphysio-diaphysial union in Indian occurs about a year or two in advance of the age at which that occurs in Europeans[8]. Jit and Balbir Singh revealed that Precocity of epiphyseal union has been attributed to racial and climatic factors.This difference could possibly be due to inadequate material or recording of incorrect ages of the subjects[9].By taking into consideration the radiological assessment in central India the study will be of help in further understanding the details of precise assessment of age in central Indian population.

Aims and Objectives

1) To asses age specific difference in epiphyseal fusion at ankle Joint in all subjects.
2) To estimate age from epiphyseal fusion at ankle joint in all Subjects.
3) To compare the findings in the epiphyseal fusion at ankle joint in central Indian population with other part of India on the basis of previous studies.

Material and Methods

The present study was carried out in Department of Forensic Medicine MGIMS Sewagram Wardha. A total of sixty eight girls participated in this study. The subjects included students of schools, College from Wardha district. The subjects were from 13-20 years of age. An informed consent was taken from all subjects prior to each investigation.

1) They are born to parents living in Central India and have lived since birth.
2) The subjects do not have any disease/deformity pertaining to bones or chronic disease affecting the general health.

Procedure of Radiography

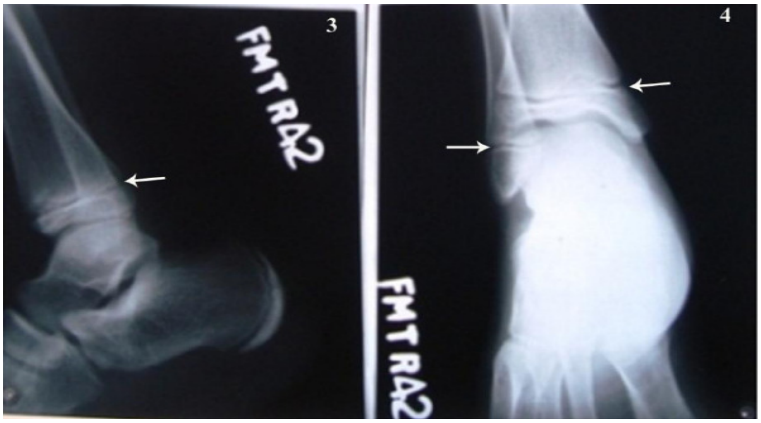
After taking the written consent the thorough physical examination and radiological evaluation was done. X-Rays were taken with the help of X-Ray machine in the Department. Minimum shots were taken to expose the joints involved in study and minimum and appropriate voltage settings of X-Ray machine were applied so as to avoid unnecessary radiation exposure of the subjects to get the desired qualities of X-Rays. All the radiological procedure was undertaken according to the precribed standards. Skeletal maturity was evaluated according to the Jits and Kulkarnis classification of four stages, Appearance, Non fusion, Partial fusion, and complete fusion ("NF", "PF", "CF" respectively)[10] .

X-Rays showing clear gap between the epiphyseal and diaphysial, showing saw tooth like appearance end were designated as "Non-fusion" (NF) X-rays. The X-rays showing a line replacing the hiatus between the epiphyseal and diaphysial ends and not showing saw tooth like appearance were designated as "Partial Fusion" (PF) X-rays. X-Rays showing the same bony architecture in the diaphysis and epiphysis and showing scar of the previous stage were designated as "Complete Fusion" (CF).The master chart was prepared and tabulated as per code number given above. It was classified, analysed and compared with known standards. Data analysis was done in P4 computer using HPSS software. At the end conclusions were drawn which were compared with available results of various previous studies.

Result

Distal end of Fibula in females shows partial fusion in 2(2.94%) cases in 14-15years of age group. It shows complete fusion in 6(8.82%) cases in 14-15years age group. Similarly it shows complete fusion in all 53(77.95%) cases between 15-20 years of age group except 1(1.47%) case which shows partial fusion in 18-19years of age group.

Distal end of Tibia in females shows partial fusion in 8(11.76%) cases in age group 14-15 years.Shows complete fusion in all 53(77.95%) cases between 15-20 years of age groups .There was exception in 18-19years of age group where only 1(1.47%) case shows partial fusion.



Photograph 1

1. Lateral View of ankle joint shows Non fusion of distal end of tibia.
2. AP view of ankle joint shows Non fusion of distal end of tibia and fibula

Table 1: Percentage of fusion in cases in females

	Distal end of Fibula			**Distal end of Tibia**		
Age in years	**NF**	**PF**	**CF**	**NF**	**PF**	**CF**
13-14	6(8.82%)	0(0.00%)	0(0.00%)	6(8.82%)	0(0.00%)	0(0.00%)
14-15	0(0.00%)	2(2.94%)	6(8.82%)	0(0.00%)	8(11.76%)	0(0.00%)
15-16	0(0.00%)	0(0.00%)	12(17.65%)	0(0.00%)	0(0.00%)	12 (17.65%)
16-17	0(0.00%)	0(0.00%)	10(14.71%)	0(0.00%)	0(0.00%)	10(14.71%)
17-18	0(0.00%)	0(0.00%)	14(20.59%)	0(0.00%)	0(0.00%)	14(20.59%)
18-19	0(0.00%)	1(1.47%)	7(10.29%)	0(0.00%)	1(1.47%)	7(10.29%)
19-20	0(0.00%)	0(0.00%)	10(14.71%)	0(0.00%)	0(0.00%)	10(14.71%)
ϰ2-value	79.43			128.30		
p-value	0.000, S,p<0.05			0.000, S,p<0.05		

Discussion

Distal end of Tibia in female in 13-14 years of age group shows Non fusion in 6(8.82%) cases. In 14-15 years of age group it shows Partial fusion in all 8(11.76%) cases. The Distal end of Tibia shows complete fusion in all 53(77.95%) cases between 15-20 years of age groups.

Table 2: Comparison of age of distal epiphyseal union of tibia in various regions and races with present study

S.N.	Researcher	Region	Age of fusion in females
1.	Davies and Parson (1927) [11].	England	18
2.	Hepworth (1929) [12].	Punjabi	17-18
3.	Flecker (1932) [13].	Australians	14
4.	Pillai (1936)	Madrasis	14-17
5.	Galstaun (1937) [17].	Bengalis	13-15
6.	Basu and Basu (1938) [16].	Hindu (Bengal)	15
7	Narain and Bajaj(1957)	Uttar Pradesh	17-19
8.	Christian C,(2005) [15].	Mexican Americans	16
9.	Bokariya et al (2009) [14].	Rajasthan	14-15
10.	Present Study	Central India	15-16

Distal end of Fibula in female in 13-14 years of age group shows Non fusion in 6(8.82%) cases. In 14-15years of age group it shows Partial fusion in 2(2.94%) cases and complete fusion in 6(8.82%) cases. The Distal end of Fibula shows complete fusion in all 53(77.95%) cases between 15-20 years of age group.

Table 3: Comparison of age of Distal Epiphyseal Union of Fibula in various Regions and Races with present study

S.N.	Researcher	Region	Age of fusion in females
1.	Davies and Parson (1927)	England	18
2.	Hepworth (1929)	Punjabi	17-18
3.	Flecker (1932)	Australian	14-15
4.	Pillai (1936)	Madrasis	14-17
5.	Galstaun (1937)	Bengalis	13-15
6.	Basu and Basu (1938)	Hindu (Bengal)	15
7	Christian C, (2005)	Mexican American	16
8.	Bokariya et al (2009)	Rajasthan	14-15
9.	Present study	Central India	15-16

Summary and Conclusion

1. This study was conducted exclusively on the young indigenous population of Central India keeping in mind that very less literature about the age estimation from ossification of knee and ankle joint is available involving this particular region of India.
2. The ossification at the ankle joint in females on right side is completed in all instances (100%) at the age of 15-20 year.
3. By comparing the available literature about ossification of long bones, fusion was delayed one to three years in this study with population of Central India than those parts of south India and population of Bengal.
4. By comparing the available literature the age of skeletal maturity in both males and females in this region are nearly similar to those in population of Madhya Pradesh, Uttar Pradesh and Rajasthan.
5. Due to changing life style pattern, dietary, climatic, behavioral factors age of ossification is changing as mentioned in the available literature. So as to evaluate these changes, studies are recommended in every region of India at regular time period for academic and Judicial interest.
6. Due to very narrow borderline range of differentiation between various stages of fusion, it is difficult to consider stage of fusion as age indicator.
7. Radiological interpretations are observer dependent so the set standards should be considered under expert guidance to arrive at conclusion in such radiological studies.
8. Along with clinical and dental examination, radiological study plays an important role to arrive at the opinion about the age in Medicolegal cases.
9. The opinion about age should always be given in the range. From this study, range of 1-2 years of margin of error can be concluded.

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Original Article

TRENDS OF UNNATURAL DEATHS IN LATUR DISTRICT OF MAHARASHTRA

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Original Article

TRENDS OF UNNATURAL DEATHS IN LATUR DISTRICT OF MAHARASHTRA

Dr. MEBansude, Dr. RV Kachare, Dr. CR Dode, VMKumre

Abstract

Death is a tragedy in whatever form, at whatever time and in whatever way it comes. Death can be natural or unnatural.Toknow the magnitude and pattern of unnatural deaths in Latur district, we have conducted an autopsy based analytic study on 722 cases of unnatural deaths in the department of Forensic Medicine during the year 2010. All data related to age, sex, marital status, religion and cause of death with manner were recorded with detailed autopsy examination and subsequently the cases were analyzed on various parameters to find the trends and other significant features of pattern of unnatural deaths in Latur district.

Out of 722 unnatural deaths analyzed, 62.74% were male and 37.26% were female.87.26% were Hindu and 12.74% were Muslim. Married deceased were 80.06% and unmarried were 19.94%.Majority of causes of death were due to trauma 38.09%, thermal injuries 26.73% and poisoning 25.21%. Deaths due to asphyxia were 9.83% and those due to therapeutic misadventure were 0.14%.

Introduction

In India, 11% of deaths due to non-communicable diseases are due to injuries and 78% of those are due to road traffic accidents (RTA). Injuries are the leading cause of mortality for young adults of less than 45 years and major burden of disease across all groups. In 1995, road accidents contributed to about 885,000 deaths in the whole world. Out of this 500,000 deaths occurred in developing countries[(1)]. In 2001 – an estimated 1.26 million people died due to RTA worldwide, 90% of them in low and middle income countries. Mortality rate was 20.8 per 100,000 population[(2)]. By 2020, death & disabilities resulting from road traffic accidents in comparison to other diseases will rise from current 9 to 3 spot & the developing nations will account for 90% of world traffic fatalities[(3)]. Next to RTA, thermal injurers, poisoning, violent asphyxial death also contribute to the unnatural deaths . Such study was not carried out in Latur district till today. So the present study was carried out to know the magnitude of the different causes of unnatural deaths. The unnatural deaths in district were reviewed with reference to age, sex, cause & manner of death.

Material & Methods

The present retrospective study was conducted in the Department of Forensic Medicine at Government Medical College & General Hospital Latur. All the cases of unnatural deaths brought to post mortem center for medico legal autopsy during 1 January 2010 to 31 December 2010 were studied. Detail information regarding the circumstances of death was sought from investigating officer,relatives. Data was compiled and analyzed as per age, sex, marital status, causes of death and manner of death. Causes of death were grossly classified as trauma, thermal injuries, violent asphyxia, poisoning and therapeutic misadventure.

Results & Observations:

In present study out of 848 total autopsies 722 were due to un-natural causes which constituted 85.14% cases. From table no.1 to table no. 5, it is clearly revealed that most of the cases were male (n=452, 62.74%). Male to female ratio was 1.68:1. Hindus were more (n=630, 87.26%) than Muslims (n=92, 12.74%) i.e. ratio being 6.84:1. Most of the cases were from age group 21-40 years (n=416, 57.6%), most common being 21-30 age group (n=239, 33.10%). 578 (80.06%) victims of unnatural death were married while144 (19.94%) were unmarried.

Trauma was most common cause of death (n=275, 38.09%) followed by thermal injuries (n=193, 26.73%). Amongst traumatic deaths, Road traffic accident (n=246, 34.07%) was commonest cause of death. In RTA common age group was 31-40 years (n=68, 9.42%) followed by age group 21-30 years (n=65, 9%). In trauma commonest cause of death was head injury. Homicidal deaths or death as a result of criminal violence were (n=16, 2.22%). Only one case of train accident was registered. Most of the traumatic deaths were accidental (n=263, 36.43%) in nature followed by homicidal (n=12, 1.66%). No suicidal death followed by trauma was registered. Traumatic deaths were more commonin males (n=219, 30.33%) than in females (n=56, 7.76%).

There were 193 cases (26.73%) from thermal injuries, of which commonest cause was kerosene burns (n=184, 25.48%) followed by electric burns (n=08, 1.11%) and only one case of lightening was registered. The age group in which thermal injuries were common was 21-30 years (n=85, 11.27%). Most of the thermal deaths were accidental 162(22.43%) in nature followed by suicidal (n=19, 2.63%). Only three cases were homicidal in nature. Thermal deaths were found commonly in females 132 (18.28%) than in males (n=61, 8.45%).

The study included 182 (25.21%) cases of death due to poisoning. Chemical poisoning was most common (n=163, 22.58%) followed by snake bite (n=19, 2.63%). The age group in which poisoning were common was 21-30 years (n=55, 7.62%) followed by age group 31-40 years (n=51, 7.06%). Poisoning was most commonly seen in males (n=123, 17.04%) than in females (n= 59, 8.17%). Commonest manner of death due to poisoning was accidental in nature (n=130, 18.01%), followed by suicide (n=52, 7.20%). No homicide death due to poisoning was noted.

Total number of cases in which death was a result of violent asphyxia were (n=71, 9.83%). Amongst which commonest cause was hanging (n=51, 7.06%) followed by drowning (n=17, 2.35%) and only three case of strangulation were registered. It was common in 21-30 years (n=25, 03.46%) age group followed by age group 11-20 years (n=17, 2.35%). Asphyxial deaths were commonly seen in males (n= 49, 6.79%) than females (n=22, 3.05%). Commonest manner of death due to asphyxia was suicidal (n=59, 8.17%), however 9 (1.24%) cases were of accident. We recorded 17 cases of drowning out of which 09 cases were accidental in nature. Three cases of homicide death were noted which were due to strangulation

Only one case of death following therapeutic misadventure was registered.

Table 1: Distribution of Natural Deaths and Un-Natural Deaths

	Distribution	**Count**	**Percentage (%)**
1	Natural Deaths	113	13.33%
2	Un-Natural Deaths	722	85.14%
3	Uncertain	13	01.53%
	Total	848	100%

Table 2: Distribution of Unnatural Deaths according to Age

	Age in years	**Count**	**Percentage(%)**
1	00-10	17	2.35%
2	11-20	103	14.27%
3	21-30	239	33.10%
4	31-40	177	24.52%
5	41-50	85	11.77%
6	51-60	46	6.37%
7	61-70	39	5.40%
8	71-80	10	1.39%
9	Above 80	06	0.83%
	Total	722	100%

Table 3: Distribution of Unnatural Deaths according to sex

	Sex	**Count**	**Percentage (%)**
1.	Male	452	62.74%
2.	Female	269	37.26%
	Total	722	100%

Table 4: Distribution of Un-Natural Deaths according to Religion

	Religion	**Count**	**Percentage (%)**
1	Hindu	630	87.26%
2	Muslim	92	12.74%
	Total	722	100%

Table 5: Distribution of Un- Natural Deaths according to Marital status

	Status	**Count**	**Percentage (%)**
1	Married	578	80.06 %
2	Unmarried	144	19.94%
	Total	722	100%

Table 6: Distribution of cases according to sex

Causes of death	**Sex**		**Total**	**Percentage (%)**
	Male	**Female**		
Trauma	219(30.33%)	56(7.76%)	**275**	38.09%
Thermal Injuries	61(8.45%)	132(18.28%)	**193**	26.73%
Poisoning	123(17.04%)	59(8.17%)	**182**	25.21%
Violent Asphyxia	49(6.79%)	22(3.05%)	**71**	9.83%
Therapeutic Misadventure	01(0.14%)	--	**01**	0.14%
	452(62.74%)	**269(37.26%)**	**722**	**100%**

Table 7: Distribution of cause of unnatural death according to Age

Age	0-10	11-20	**21-30**	**31-40**	**41-50**	**51-60**	**61-70**	**71-80**	**>80**	**Total**
Trauma										
R.T.A.	10 (1.38)	28 (3.88)	65 (9.00)	68 (9.42)	31 (4.29)	21 (2.91)	16 (2.22)	05 (0.69)	02 (0.28)	246 (34.07%)
Train accident	-	-	--	01 (0.14)	--	--	--	--	--	01 (0.14%)
Criminal Violence	-	--	03 (0.41)	04 (0.55)	02 (0.28)	02 (0.28)	01 (0.14)	--	--	12 (1.66%)
Misc.	02 (0.28)	03 (0.41)	05 (0.69)	01 (0.14)	02 (0.28)	--	02 (0.28)	--	01 (0.14)	16 (2.22%)
Sub-total	**12 (1.66)**	**31 (4.29)**	**73 (10.1)**	**74 (10.2)**	**35 (4.85)**	**23 (3.18)**	**19 (2.63)**	**05 (0.69)**	**03 (0.41)**	**275 (38.09%)**
Thermal Injuries										
Kerosene Burn	01 (0.14)	32 (4.43)	84 (11.63)	33 (4.57)	13 (1.80)	09 (1.25)	09 (1.25)	02 (0.28)	01 (0.14)	184 (25.48%)
Electric Burns	02 (0.28)	--	01 (0.14) --	02 (0.28)	02 (0.28)	01 (0.14)	--	--	--	08 (1.11%)
Lightening	--	--		01 (0.14)	--	--	--	--	--	01 (0.14%)
Sub-total	**03 (0.41)**	**32 (4.43)**	**85 (11.7)**	**36 (4.99)**	**15 (2.08)**	**10 (1.38)**	**09 (1.25)**	**02 (0.28)**	**01 (0.14)**	**193 (26.73%)**
Poisoning										
Chemical	01 (0.14)	22 (3.04)	52 (7.20)	46 (6.37)	21 (2.91)	11 (1.52)	07 (0.97)	02 (0.28)	01 (0.14)	163 (22.58%)
Snake Bite	--	01 (0.14)	03 (0.42)	05 (0.69)	04 (0.55)	02 (0.28)	03 (0.42)	01 (0.14)	--	19 (2.63%)
Sub-total	**01 (0.14)**	**23 (3.18)**	**55 (7.62)**	**51 (7.06)**	**25 (3.46)**	**13 (1.80)**	**10 (1.38)**	**03 (0.41)**	**01 (0.14)**	**182 (25.21%)**
Asphyxia										
Hanging	--	11 (1.52)	16 (2.21)	13 (1.80)	09 (1.24)	--	01 (0.14)	--	01 (0.14)	51 (7.06%)
Strangulation	--	01 (0.14)	02 (0.28)	--	--	--	--	--	--	03 (0.41%)
Drowning	01 (0.14)	05 (0.69)	07 (0.96)	03 (0.41)	01 (0.14)	--	--	--	--	17 (2.35%)
Sub-total	**01 (0.14)**	**17 (2.35)**	**25 (3.46)**	**16 (2.22)**	**10 (1.38)**		**01 (0.14)**		**01 (0.14)**	**71 (9.83%)**
Therapeutic Misadventure										
	--	--	1(.14)	--	--	--	--	--	--	**01(.14%)**
	17 (2.35)	**103 (14.2)**	**239 (33.1)**	**177 (24.5)**	**85 (11.7)**	**45 (6.23)**	**39 (5.40)**	**10 (1.38)**	**06 (0.83)**	**722 (100%)**

Table 8: Distribution of causes of unnatural death according to manner of death

Cause of Deaths	**Accidental**	**Suicidal**	**Homicidal**	**Total**
Trauma				
R.T.A.	246 (34.07%)	--	--	246(34.07%)
Train accident	01(0.14%)	---	--	01(0.14%)
Criminal Violence	--	--	12(1.66%)	12(1.66%)
Miscellaneous	16(2.22%)	--	--	16(2.22%)
Sub-total	**263(36.43%)**	--	**12(1.66%)**	**275(38.09%)**
Thermal Injuries				
Kerosene Burn	162(22.43%)	19(2.63%)	03(0.42%)	184(25.48%)
Electric Burns	08(1.11%)	--	--	08(1.11%)
Lightening	01(0.14%)	--	--	01(0.14%)
Sub-total	**171(23.68%)**	**19(2.63%)**	**03(0.42%)**	**193(26.73%)**
Poisoning				
Chemical	111(15.37%)	52(7.20%)	--	163(22.58%)
Snake Bite	19(2.63%)	--	--	19(2.63%)
Sub-total	**130(18.01%)**	**52(7.20%)**		**182(25.21%)**
Violent Asphyxia				
Hanging	--	51(7.06%)	--	51(7.06%)
Strangulation	--	--	03(0.42%)	03(0.42%)
Drowning	09(1.24%)	08(1.10%)	--	17(2.35%)
Sub-total	**09(1.24%)**	**59(8.17%)**	**03(0.42%)**	**71(9.83%)**
Therapeutic Misadventure	01(0.14%)	--	--	**01(0.14%)**
	572(79.50%)	**130 (18.01%)**	**18(2.49%)**	**722(100%)**

Table9: Distribution of causes of unnatural deaths according to sex

Causes of Death		Male	Female	Total	Percentage(%)
Trauma	R.TA	201(27.84%)	45(6.23%)	246	**34.07%**
	Train Accident	01(0.14%)	--	01	**0.14%**
	Criminal	08(1.08%)	04(0.55%)	12	**1.66%**
	Violence	09(1.25%)	07(0.97%)	16	**2.21%**
	Miscellaneous	**219(30.33%)**	**56(7.76%)**	**275**	**38.09%**
	Sub-total				
Thermal Injuries	Kerosene Burn	53(7.34%)	131(18.14%)	184	**25.48%**
	Electric Burns	07(0.97%)	01(0.14%)	08	**1.11%**
	Lightening	01(0.14%)	--	01	**0.14%**
	Sub-total	**61(8.45%)**	**132(18.28%)**	**193**	**26.73%**
Poisoning	Chemical	111(15.37%)	52(7.20%)	163	**22.58%**
	Snake Bite	12(1.66%)	07(0.97%)	19	**2.63%**
	Sub-total	**123(17.03%)**	**59(8.17%)**	**182**	**25.21%**
Violent Asphyxia	Hanging	35(4.85%)	16(2.22%)	51	**7.06%**
	Strangulation	02(0.28%)	01(0.14%)	03	**0.42%**
	Drowning	12(1.66%)	05(0.69%)	17	**2.35%**
	Sub-total	**49(6.78%)**	**22(3.05%)**	**71**	**9.83%**
Therapeutic Misadventure		**01(0.14%)**	**--**	**01**	**0.14%**
		453(62.74%)	**269(37.26%)**	**722**	**100%**

Discussion:

The observations of the present study were compared with similar studies by other authors. RV Kachare et al[4] in their study have reported similar findings as regards the distribution of affected age groups, gender, religion and marital status.

RV Kachare et al[5] in their study observed that burn (29.41%) was the commonest cause of death followed by poisoning (24.09) and trauma (21.85%). In their study 69.40 % cases were of accidental in nature. This difference might be due to the fact that present study area belongs from urban region and more industrialized. A Pathak et al[6] observed burns (n= 216, 45.0%) as commonest cause of unnatural death in females followed by poisoning. The commonest manner of death in female was accidental (n=271, 56.46%) followed by suicidal in 141 (29.37%) cases with higher incidence of female unnatural death in the age group of 20-29 years [168(35.0%)].

In a study conducted in cases of deaths due to road traffic accidents, GGovekaret al[7] observed comparable findings. They observed that in Road traffic accident deaths are more common in Males than in females (10:1 ratio) with common age group of RTA as 30-44 years in93(38-3%)cases. SPanda et al[8] found that, in their study, in deaths due to RTA, 87.11% were males and 12.9% were females and maximum number of casesbelonged to age group of 25-34 years (n=130, 25.04%). Similar findings were noted in our present study.

RChawla et al[9], in their study have observed that females (64%) were more common victims of burn than males (36%) with commonest age group 21-30years (52%). Ganguly[10] observed that 58.34% cases of burns belonged to female category as compared to 41.66% males. Aggarwal and Chandra [11] observed 67 cases belonging to female category out of 100 cases of burns and majority of deaths belonged to second and third decade. Haralkar SJ &Rayate M [12] observed 239 females and 104 males out of 343 cases and maximum number of cases [156(45.48%)] belonged to age group between 15 and 25 years.

RC Zariwala et al [13] observed higher incidence of poisoning in age group of 20-29 years i.e. 40.3% with higher incidence found in males, they also observed that 481 cases of poisoning were of suicide and 68 were of accidental poisoning out of 556 cases of poisoning.

RVKachare et al[2] observedfindings comparable to the observations in present study regarding the pattern of nature of the same.B Mujumdar[14]in their one year study observed that Hanging (72.13%) as a method of violent asphyxia was more common, with next familiar method as drowning (19.67%). He also observed that 77.04% deaths were due to suicides followed by 12.29% accidental nature of violent asphyxia. Their findings were comparable with our present study.

Conclusion

85.14% deaths were un-natural in nature.Most commonly involved age group was 21-30 years. Male to female ratio was 1.68:1.Hindus were more commonly involved. Married Most of the victims were married. Trauma was most common cause of death (38.09%) followed by thermal injuries (26.73%), poisoning (25.21%) and asphyxia (9.83%). In traumatic deaths Road traffic accident (34.07%) was commonest cause of death. Most traumatic deaths were accidental in nature. Amongst deaths due to thermal injuries kerosene burns (25.48%) were most common and in 21-30 years (11.27%) age group.In asphyxial death hanging (7.06%) was most common cause of death, followed by drowning (2.35%). Most commonly seen in males (6.79%). Accidental deaths were most common followed by suicide.

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Original Article

PATTERN OF CHEST INJURIES IN FATAL VEHICULAR ACCIDENTS IN CENTRAL INDIA

Dr. P Murkey, Dr. N Nagrale, Dr. B Tirpude, Dr. P Wankhade, Dr. S Patond

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Original Article

PATTERN OF CHEST INJURIES IN FATAL VEHICULAR ACCIDENTS IN CENTRAL INDIA

Dr. P Murkey, Dr. N Nagrale, Dr. B Tirpude, Dr. P Wankhade, Dr. S Patond

Abstract

A post-mortem study of 100 cases of road traffic accidents with chest trauma alone or in combination with other body region injuries were undertaken at Forensic Medicine department, Mahatma Gandhi Institute of Medical Sciences, Sewagram, Wardha from May 2010 to April 2012 (two year study). The study revealed that chest injuries with associated head injuries were present in 59% of the cases. Males accounted for 84% cases with commonest age group of 21-30 years (28%). Out of these 62% were brought dead. Hemorrhage & shock was the leading cause of death. 94% cases had multiple fractured ribs. Laceration was the commonest injury in the lungs. Maximum accidents occurred at night time i.e. 9 pm to 12 midnight (22%). Heavy vehicles accounted for 46 % of the cases and pedestrians were the most common category of road user.

Key Words: thorax, road traffic accidents, chest injuries.

Introduction

The incidence of chest trauma has increased significantly over the last 100 years as a result of the development of rapid means of transport and the rising level of violence in society in general. Thorax, because of its size and anatomical location is a major site of trauma in road traffic accidents. The chest wall, consisting of ribs, sternum, clavicles, and scapulae, affords protection to the underlying viscera but serious intrathoracic injuries may be present even in the absence of obvious chest wall injury. Care must be taken to avoid underestimation of the effect of the injury on respiratory mechanics. Most common causes of fatality in such cases are deranged cardiorespiratory function, uncontrolled bleeding, associated injuries, and sepsis. Conditions affecting primarily extrathoracic sites may also have an indirect effect on the lungs, causing adult respiratory distress syndrome. Severity of injury is related to the magnitude of kinetic energy delivered which can be expressed by the formula $KE=1/2MV^2$.This study was undertaken to assess the pattern of chest injuries in fatal road traffic accidents occurring in central India and undergoing post mortem examination at Forensic Medicine department, Mahatma Gandhi Institute of Medical Sciences, Sewagram, Wardha and to establish the relation between extent, nature and type of chest injuries and other injuries to fatality, survival period, age, sex and type of vehicle involved.

Materials and Methods

This study was conducted on the dead bodies coming for post-mortem examination to the mortuary of the Forensic Medicine department, Mahatma Gandhi Institute of Medical Sciences, Sewagram, Wardha from May 2010 to April 2012. A total of 100 cases of deaths due to road traffic accidents were death due to chest injury alone or in combination with other injuries of the body regions were studied. A detailed information regarding the nature, time of accident, type of vehicle involved, category of victim were recorded either from investigating officer or relatives. A detailed external examination noting age, sex, height, weight, type of external injuries was done. A detailed internal examination of the thorax was done and every injury to thoracic structures was recorded. Examination of other body regions was also done.

Results & Observations

In the present study, most vulnerable age group was 21-30 years (28%), followed by 31-40 years (24%). People below 10 years accounted only 4% of cases (Table-1). Male sex shows preponderance (84% cases) over females (16 % cases). Maximum number of accidents occurred between 9 pm to 12 am (22% cases) followed by 12 am- 3 am (17% cases). Only 6 % cases were recorded between 3 am- 6 am. In the category of victims, pedestrians were the worst sufferers (57% cases) followed by motor cyclists/ scooters (20% cases). Bullock cart and bus passengers accounted only 1% of the total cases. (Table 4)

Pattern of chest injuries in various road users (Table- 5 & 6) showed multiple rib fractures in 94% cases. Out of these 39.3% had unilateral fracture & 61 % cases had bilateral multiple fracture. Collar bone fractures were seen in 44 % cases. 100 % incidence of rib fracture was seen among truck occupants, two wheelers, 3 wheelers, 4 wheelers & also in rickshaw & bullock cart occupants.

Among the organs in the chest, lung involvement was seen in 76% cases, whereas laceration was seen in 49% cases followed by collapsed lung (18% cases). Laceration of lung is commonest among 2 wheelers riders (60%) followed by pedestrians (43.8%)

Moderate to severe haemothorax was detected in 58% cases out of which 65.5% cases had bilateral and 34.5% cases had unilateral involvement. (Table-7)

4% cases had injury in the blood vessels, 5% cases showed injury to trachea & bronchi. Heart was involved in 10% of cases out of which 50% cases had right ventricle laceration. Esophagus was involved in 1% cases and diaphragm in 7% cases.

Chest injury alone accounted for 3% cases, whereas chest & head injury accounted for maximum number of cases (59%), followed by chest & limb injury (51%), 38% cases had injuries in more than two body regions (Table-8). The study also revealed that 62% cases were spot/brought dead, followed by survival period of 2-6 hrs. Only 2% cases survived for more than two weeks (Table-9)

Massive intrathoracic bleeding resulting in hemorrhage& shock was the leading cause of death in 47% cases, followed by head injury in 34% cases. (Table-10)

Table 1: Age & Sex-wise Distribution

No	Age/years	Male		Female		Total	
		No	%	No	%	No	%
1	0-10	1	25	3	75	4	4
2	11-20	14	93.3	1	6.6	15	15
3	21-30	27	96.4	1	3.5	28	28
4	31-40	20	83.3	4	16.7	24	24
5	41-50	8	88.8	1	11.2	9	9
6	51-60	11	92.8	3	7.2	14	14
7	61 & above	3	50	3	50	6	6

Table 2: Sex Incidence

Sr.No	Sex	No. of cases	%
1	Male	84	84
2	Female	16	16

Table 3: Time of Incidence

Sr.No	Time Period	No. of cases	%
1	12 am- 3 am	17	17
2	3 am- 6 am	6	6
3	6 am- 9 am	13	13
4	9 am- 12 noon	13	13
5	12 noon- 3 pm	10	10
6	3 pm- 6 pm	7	7
7	6 pm- 9 pm	10	10
8	9 pm- 12 midnight	22	22
9	Not known	2	2

Table 4: Victim versus Vehicle Involved

Victim	Heavy vehicle bus/ truck	Car/ Taxi/ Jeep	Three wheeler	Motor cycle/ scooter	Self	Un known	Total	%
Pedestrian	27	5	3	2	0	20	57	57
Bus passenger	0	0	0	0	1	0	1	1
Truck occupant	0	0	0	0	4	0	4	4
By-cyclist	2	0	0	0	1	2	5	5
Motorcycle/scooter rider	11	3	0	0	2	4	20	20
Car/Taxi/Jeep occupants	1	0	0	0	3	0	4	4
Three wheeler occupants	3	0	0	0	0	0	3	3
Rickshaw Rider	1	1	0	0	1	2	5	5
Bullock cart	1	0	0	0	0	0	1	1
Total	46	9	3	2	12	28	100	
	46 %	9%	3%	2%	12%	28%	100%	

Table 5: Injuries to the Thoracic Organs

Victim	Total	Fracture Ribs		Fracture sternum		Fracture Collar bones		Fracture Dorsal vertebrae	
		No	%	No	%	No	%	No	%
Pedestrian	57	54	94.7	6	10.5	25	43.8	8	14
Bus passenger	1	0	0	0	0	1	100	0	0
Truck occupant	4	4	100	0	0	2	50	1	25
Cyclists	5	3	60	1	20	2	40	1	20
Motorcycle/scooter occupants	20	20	100	3	15	10	50	6	30
Car/Taxi/Jeep	4	4	100	0	0	1	25	1	25

occupants									
Auto rickshaw occupants	3	3	100	1	33.3	2	66.6	1	33.3
Rickshaw occupants	5	5	100	0	0	1	20	2	40
Bullock cartoccupants	1	1	100	0	0	0	0	0	0
Total	100	94		11		44		20	

Table 6: Injuries to the Thoracic Organs

Category	Total Cases	Injury To Lungs					
		C	%	L	%	Collapse Consolidation	%
Pedestrian	57	1	1.75	25	43.8	15	26.3
Bus passenger	1	0	0	0	25	0	0
Truck occupant	4	0	0	1	25	0	0
Cyclists	5	0	0	1	20	3	60
Motorcycle/scooter occupants	20	2	10	12	60	6	30
Car/Taxi/Jeep occupants	4	0	0	3	75	0	0
Auto rickshaw occupants	3	0	0	2	66.6	0	0
Rickshaw occupants	5	0	0	5	100	0	0
Bullock cart occupants	1	0	0	0	0	0	0
Total	100	3		49		24	

(C): Contusion, (L): Laceration

Table 7: Involvement of Pleural Cavity

Victims	No. of cases	Hemothorax	%
Pedestrian	57	29	50.8
Bus passenger	1	0	0
Truck occupant	4	1	25
Cyclists	5	2	40
Motorcycle/scooter occupants	20	16	80
Car/Taxi/Jeep occupants	4	3	75
Auto rickshaw occupants	3	3	100
Rickshaw occupants	5	4	80
Bullock cart occupants	1	0	0
Total	100	58	

Table 8: Injuries To Other Body Regions Along With Chest Injuries

Victims	Chest injury alone	Chest+Abdominal injury	Chest+Head injury	Chest+Limb injury	Injuries >2 body regions
Pedestrian	2	26	30	29	18
Bus passenger	0	0	1	0	0
Truck occupant	0	1	2	1	0
Cyclists	0	1	3	2	1
Motorcycle/ scooter rider	1	12	15	14	13
Car/Taxi/Jeep occupants	1	1	3	3	2
Auto rickshaw occupants	0	2	2	1	2
Rickshaw occupants	0	3	2	1	1
Bullock cart occupants	0	1	1	0	1
Total	3	47	59	51	38

Table 9: Duration of Survival

Sr. No	Duration Of Survival	No of cases	%
1	Spot/brought dead	62	62
2	<2 hr	4	4
3	2-6 hr	12	12
4	6-12 hr	4	4
5	12-24 hr	2	2
6	24-48 hr	5	5
7	2 days- 1 week	7	7
8	1-2 week	2	2
9	2-4 weeks	1	1
10	>4 weeks	1	1

Table 10: Cause of Death

No	Cause Of Death	No of Cases	%
1	Hemorrhagic shock	47	47
2	Head injury	34	34
3	Hemorrhagic shock + Head injury	11	11
4	Spinal injury	1	1
5	Spinal injury + Head injury	5	5
6	Septicemia	1	1
7	Head injury + Consolidation of Lungs	1	1

Discussion

Incidence of road traffic accidents has increased at an alarming rate in our country. Most of the metropolitan cities have become endemic foci of deaths due to vehicular accidents.

The most common age group affected in the present series is 21-30 years, followed by 31-40 years similar to other observations [1, 2, 7].The reason being this age group leads a more active life & therefore exposes itself to traffic hazards. Male preponderance (84%) over female (16%) could be due to the fact that males are more exposed to outdoor activities as compared to females, which is in conformity with observations by other authors [1,5,7,13].Maximum accidents occurred between 9 pm-12 midnight (22%), reason could be due to inefficient lights on road, overcrowding, alcohol abuse, these things were consistent with previous studies [11,14].In the present series 46% fatalities are claimed by heavy vehicles (buses & trucks), similar findings were observed by other author [1]. Pedestrians accounted for 57% cases followed by two wheelers (20%) which was consistent with the findings of previous studies [1,9,12].62 % of the cases were spot/brought dead, which could be due to inefficient ambulance services. Only 2% of the cases had survival between 12-24 hours. 84% of the cases of chest injury died within 24 hours.

In the chest, rib fractures were seen in 94% of cases, being unilateral in 37%. CH Prange (1990) reported that rib fractures in traffic accidents are twice as compared to non-traffic accidents [8]. Fracture clavicle was encountered in 44% of the cases. K. Shcunk (1993) reported that after ribs clavicle fracture is the most common [10]. The most common organ involved was lungs (76%) followed by 10% of cases where heart was involved. In 49% of cases laceration was present. These incidences are much higher compared to western countries [12, 14]. These higher incidences could be due to wide variety of road users involved. In the present series most of the victims were pedestrians & two wheeler occupants whereas in the West car occupants are the main victims. Hemothorax was observed in 38% of cases. Injury to the trachea & bronchi was seen in 5% of cases whereas esophageal injury was present in 1% & diaphragmatic injury was encountered in 7% cases.

In the present series along with chest injury, head injury was encountered in 59% of cases. Similar high incidences were reported by others [1,4]. Incidence of head injury has fallen in motorcycle/scooter occupants due to wearing of crash helmets. Abdominal injuries were present in 47% cases & limb injuries were present in 51% of the chest injury cases analyzed. Injuries to the more than two body regions were encountered in 38% cases. Hemorrhage & shock was the leading cause of death in 47% cases, followed by head injury in 34% cases. S. Sevitt (1968) studied 91 cases of thoracic trauma & 70% of the injuries were fatal or contributory to death [12]. M. Ndiaye (1995) reported that hemorrhage & shock accounted for 44.82% cases [6].

Conclusion

The first human fatality associated with a motor vehicle was a pedestrian killed in 1899 and these injuries due to road traffic related trauma are worsening each year. Injury is the leading cause of death among young adults in the developing countries and chest trauma is imposing an increasingly severe burden on the health infrastructure of the developing world. The use of motor vehicles is growing worldwide; a particular concern in emerging nations where increasing urbanization, overcrowding and scant regard for the traffic rules are the norm. A recognition of the typical patterns of injury coupled with a logical sequence for the initial assessment and management of trauma patients will contribute to reductions in

mortality and morbidity; however, the most significant impact on reducing the worldwide burden of motor vehicle-related trauma will come from injury prevention programs organized at societal and governmental levels.

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Original Article

AWARENESS ABOUT CONSUMER PROTECTION ACT AMONG JUNIOR DOCTORS

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Original Article

AWARENESS ABOUT CONSUMER PROTECTION ACT AMONG JUNIOR DOCTORS

Dr. RV Kachare, Dr. SP Akhade, Dr.KR Rohi

Introduction

The Consumer Protection Act (CPA) was enacted in 1986 in India which is important milestone in the history of legislation in India giving rise to new consumer jurisprudence. This Act introduced three tier quasi-judicial consumer dispute disposal mechanism i.e. district level, state level and national level for time bound consumer justice.

Before commencement of this act all the disputes related to negligence of doctors or hospitals were filed under the relevant sections of Indian Penal Code to claim the damages or to get the negligent punished. These claims were time consuming and expensive. After the introduction of CPA drastic changes has occurred regarding referring claims to district, state, national forum.

The effective implementation of the CPA commenced since 1990. Large number of consumers and organization started approaching CPA forums for redress of grievances. Act provides for establishment of consumer council to educate the public and creation of authorities for settlement of consumer disputes.

Consumer awareness is emerging in the country, concepts are changing, laws are getting updated and consumers are getting more and more demanding. So it is essential on the part of medical professionals to have updated and adequate knowledge and awareness about CPA to give better services and prevent consumer disputes.

Thus the present study was carried out to know the awareness about CPA among the junior doctors working in Government Medical College, Latur.

Aims and objectives

1. To study awareness about Consumer Protection Act amongst Junior Doctors.
2. To study the areas requiring corrective measures.
3. To make necessary corrective measures to update awareness and knowledge about CPA.
4. To suggest preventive measures.

Material and methods

The present study was undertaken to study awareness of consumer protection act amongst junior medical officers and residents working at Government Medical College, Latur, during 10 February to 20 February 2012. A self administered close questionnaires having 30 questions related to various aspects of CPA having 04 options were administered to all junior medical professional having basic medical graduate qualification i.e. M.B.B.S as a minimum criteria and those who were willing to voluntarily participate in the study. Only those registered PG students and casualty medical officers who joined recently were included andpostgraduate qualified staff i.e. medical teachers and doctors who were not willing to participate in study were excluded from study.Information was collected regarding personal characteristics such as age in completed years, sex, qualification and experience in medical profession (in years).Information on awareness about CPA including year of enactment, years of amendment, time limit for disposing off a complaint, amount of court fees charged

&pecuniary jurisdictions, other powers to implement the provisions of the act, appellate authority etc.

The above information was collected by distributing questionnaires during above mentioned period and collected back immediately. The data was analyzed and tabulated as shown in tables. Percentage score was allotted to each respondent depending upon marks obtained out of 30. Each question carried one mark. Marks were converted into percentage. For each variable pertaining to respondents, the mean percentage score was calculated and tabulated in front of each variable.

Scope of CPA

1) Under the provisions of Consumer Protection Act, redressal agencies have been established at three different levels. A District Consumer Disputes Redressal Forum is set up at each district headquarter. It has the pecuniary jurisdiction to grant compensation uptoRs. 20 lakhs. A State Consumer Disputes Redressal Commission has been established at the capital of each state. The state Commission has pecuniary jurisdiction to grant compensation from Rs. 20 Lakhs to Rs. 1 Crore. A National Consumer Disputes Redressal Commission has been established at New Delhi. The National Commission has pecuniary jurisdiction to grant compensation of value more than 1 crore. Aggrieved party can appeal against the order of District forum to the State Commission within 30 days of receipt of the order. Similarly any party can appeal against the order of State Commission to the National Commission within 30 days of receipt of the order. The appeal against the order of National Commission will lie before the Supreme Court of India.
2) Consumer- Consumer means any person who buy any goods for a consideration which has been paid or promised partlypaid and partly promised or any system of deferred paid (hire, purchase or installment sell) and included any other user of such good when such use is made with the approval of buyer, but does not includes a person who obtains such good for resell or for any commercial purpose. or hires or avails of any services for a consideration which has been paid or promised, or partly paid and partly promised or under any system of deferred payment and includes any beneficiary of such service when such service are availed of which the approval of first mentioned person.
3) Goods- As defined in the sale of goods act 1930, goods means every kind of movable property other than actionable claims and money.
4) Service- Service means service of any description which is made available to potential users but does not include the rendering any service free of charge or under a contract of personal service.
5) Consumer dispute- This mean a dispute where a person against whom a complaint has been made, denies or disputes the allegation contained in the complaint.
6) Unfair trade practice-
    a. a) defect- Any fault , imperfection or shortcoming in the quality, quantity, potency, purity or standard which is required to be maintained by or under any law for the time being in force or under any contract expressed or implied or is claimed by the trade in any manner whatsoever in relation in any goods.
    b. Deficiency- Any fault imperfection shortcoming or inadequacy in quality nature and manner of performance which is required to be maintained by or under any law for the being in force or has been undertaken to be performed by a person pursuance of a contract or otherwise.

Observations and Discussion

In the present study, as our aim was to know awareness about Consumer Protection Act, in junior doctors.We selected only junior doctors for study which included Resident Doctors and Casualty Medical Officers having basic medical graduate qualification i.e. M.B.B.S. Total 74 Doctors participated in this study. Aself administered closed questionnaire having 30 questions related to various aspects of CPA having 04 options were distributed to all. Time of thirty minute was allowed to fill the questionnaire. It was collected within thirty minutes immediately. Each question carried one mark. Questions were framed in such way that they should cover various aspect of Consumer Protection Act like - composition of consumer forum, introductory aspect, its procedural aspect and power. Some questions related to Professional Negligence and preventive measures were also includes as they are related to Consumer Protection Act. After assessing thesequestions findings and observations were tabulated. These tables are analyzed and studied.

Table 1: Sex-wise distribution of awareness about CPA

Sex	Participated	Mean awareness
Male	60	13.18
Female	14	12.14
Total	74	12.99

From above table it is evident that mean awareness score is higher in males then females.

Table 2: Age-wise distribution of awareness about CPA

Faculty	Age	Participated	Mean awareness score
Clinical	24 - 26	20	12.80
	27 - 29	21	12.00
	30 & above	09	13.90
Para And Nonclinical	24 - 26	08	11.75
	27 - 29	10	14.80
	30 & above	06	13.83
Total		74	12.99

From this table it can be concluded that in the Doctors working in clinical faculties having age group of 24 to 26 and 27 to 29 there is marginal difference in mean awareness score where as the Doctors above the age of 30 yrs. are having higher mean awareness score.

Table 3: Department wise mean of awareness about CPA

Faculty	Junior doctor participated	Department wiseMean awareness
Clinical	50	12.72
Paraclinical	21	13.61
Nonclinical	03	13
Total	74	12.99

This table shows that Doctors working in clinical faculties are having comparatively low mean awareness score than para and non-clinical faculties.

In para and non-clinical faculties mean awareness score is comparatively less in age group of 24 to 26 where as it is approximately same in other age groups. It can be concluded that in all faculties as age and experience increases the mean awareness score increases.

Table 4: Awareness about CPA by various aspects (mean scores)

Faculty	Introductory aspect of CPA	Composition, procedures& power of consumer fora.	Negligence & preventive aspect	Total mean score about CPA awareness
Clinical	3.70	5.24	3.76	12.72
Para-clinical	3.95	6.47	3.19	13.61
Non-clinical	2.66	5.66	4.66	12.99
Mean score	3.44	5.79	3.87	13.11

Table 4 depicts the mean awareness score regarding composition of consumer's forum, procedural aspect and power of consumer court was comparatively more than introductory aspect of CPA and professional negligence.

Table 5: Faculty-wise grade of awareness about CPA (as per marks secured)

Branch	<35% (very poor)	35-50% (poor)	51-60% (moderate)	61-75% (good)	>75% (excellent)	Total
Clinical	9 (18%)	27 (54%)	10 (20%)	4 (8%)	0 (0%)	50(100%)
Para & nonclinical	7 (29.16%)	7(29.16%)	6 (25%)	4 (16.66%)	0(0%)	24(100%)
Total	16(21.62%)	34(45.95%)	16(21.62%)	8(10.81%)	0(0%)	74(100%)

From Table No.5 it can be observed that out of 74 doctors, 50 belonged to clinical faculty, whereas 24 to para& non-clinical faculties. It is clear from the table that proportion of doctors belonging to para& non-clinical faculty had moderate to good knowledge(41.66%) compared to clinical faculty(28%).

Table 6: Awareness about medical indemnity insurance:

Awareness about indemnity insurance	Number of doctors	Percentage of awareness
Ever heard	61	82.43%
Not heard	13	17.57%
Total	74	100 %

From Table No.6it can be observed that out of 74 doctors who participated in study 82.43% (61) Doctors had heardabout Medical Indemnity Insurance which is a good sign.

Conclusion

Following conclusions can be drawn about from this study –

1. Mean awareness score is higher in males then females.
2. It can be concluded that in all faculties as age and experience increases the mean awareness score increases.
3. Mean awareness score regarding composition of consumer's forum, procedural aspect and power of consumer court was comparatively more than introductory aspect of CPA and professional negligence.
4. It can be concluded that there is average awareness about Consumer Protection Act amongst junior Doctors.
5. 82.43% Doctors had heard about Medical Indemnity Insurance which is a good sign.

Suggestions and recommendations

- Orientation programsregarding CPA to all PG students are must after taking admission to Post Graduate course.
- Compulsory CME programs should be arranged frequently.
- Make them aware about Medical Indemnity Insurance.

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Annexure

Proformaforthe Study

Name –
Age- Yrs. Gender-M/F
Qualification- MO/ JR-I /JR-II
Date Of Passing MBBS- Experience- Yrs:

1. Have you heard about Consumer Protection Act in medicalprofession?
   a. Yes b. No.
2. Are you aware about Medical Indemnity Insurance?
   a. Yes b. No.
3. Consumer Protection Act (CPA) was passed by Parliament in -
   a. 1986 b. 1988 c. 1992 d. 1995
4. Supreme Court of India included medical services under the ambit of CPA in-
   a. 1986 b. 1988 **c. 1995** d. 1999
5. The time limit for appeal at various levels is-
   a. 30 Days b. 45 Days c. 60 Days d. 90 Days
6. In CPA a compliant is to be filled within ----- yrs from date onwhicha caseof action has arisen.
   a. 01 yrs. **b. 02 yrs.** c. 03 yrs d. Any time.
7. The maximum time limit for giving justice to patient in days is-
   a. 90 b.150
   c.200 d. 100
8. IPC for Criminal Negligence is-
   a. 304- A b.304-B
   c. 300 d. 302
9. For false complaint in CPA the complainant shall pay as penalty toopposite party, not exceeding--
   a. Rs, 10,000/- b. Rs, 25,000/-
   c. Rs, 50,000/- d. Rs, 100,000/-
10. District Forum shall refer a copy of compliant to apposite partywithin -----admission date.
    a. 10 days b. 20 days
    c. 21 days d. 30 days.
11. National commission consist of ----- members
    a. Two b. Three **c. Four** d. One
12. The appeal for compensation cases which are not satisfiedaboutdecision at National Commission Level is-
    a. State Commission b. Session Court
    c. High Court **d. Supreme Court**
13. If a doctor fails to comply in a CPA compensation cases thenpunishment is in the form of
    a. Imprisonment b. Fine up to 10,000/-
    c. Both a & b. d. None of above
14. Essential ingredients to prove Negligence are -
    a. Duty of doctor b. Improper care in treatment
    c. Injury to patient d**. All of above**
15. Who can file a complaint for compensation under CPA-?
    a. Patient b. Lawyer of patient
    c. State/Central Govt. **d. All of above.**

16. The power of Consumer Court are like-
    a. Civil Court b. Criminal Court
    c. Both Civil & Criminal d. Special power
17. Following is NOT included under COPRA-
    a. Deficiency in treatment b. Deficiency in service
    c. Free medical services d. Mispresentation of quality
18. Following are defenses against Professional Negligence EXCEPT-
    a. Contributory negligence b. Therapeutic Misadventure
    c. Medical Maloccurance **d. Res IpsaLocutor**
19. The risk of litigation against Doctor can be reduced by –
    a. Doctor-Patient relationship b. Meticulous Record keeping
    c. Maintaining Standard of Medical services **d. All above**
20. State commission has the power to dispose off matters askingcompensation amount is-
    a. Not more than 20 lakh **b. 20 lakh – 1 crore**
    c. More than 1 crore d. None of above
21. Which is not correct about consumer court-?
    a. No advocate required b. No court fees to be paid
    c. Accused has to be present d. Decision given within 90 days
22. All the following are the defenses available for a doctor againstallegationof negligence except-
    a. Limitations **b. No fees accepted**
    c. Therapeutic Misadventure d. Res Judicata
23. Product liability refers to-
    a. Liability of Doctor b. Liability of Patient
    c. Liability of Manufacturer d. Liability of Hospital
24. Product liability may be charged against all except—
    a. Manufacturer of drug & appliances b. Seller of drug & appliances
    c. Buyer of drug & appliances d. Doctor using drug & appliances
25. Against alleged Professional Negligence a person can file a case in –
    a. Civil Court b. Criminal Court
    c. Consumers Court **d. Any one of above.**
26. Who is president of National Commission-?
    a. Retired Supreme Court Judge b. Retired High Court Judge
    c. Retired District Court Judge d. Any one of above
27. Compliant made in District Forum should be charged a fees fixed by
    a. Central Government **b. State Government**
    c. Central Govt. & State Govt. d. None
28. Recovery of the amount from the apposite party is under control of –
    a. Collector b. Member appointed by State Govt.
    c. Commissioner d. Member appointed by Central Govt.
29. District Forum has same power as are vested in Civil Court-
    a. I - Class Magistrate b. II-Class Magistrate
    c. Tahasildar d. Collector
30. Time limit to dispose off compensation cases at a level of Dist. Forum is-
    a. Within 01 yr. **b. Within 02 yr.**
    c. Within 03 yr. d. None of above

Original Article

A RETROSPECTIVE STUDY OF DEATH DUE TO ROAD TRAFFIC ACCIDENT AT AKOLA.

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Original Article

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Abstract

Road traffic accident claims a substantial number of lives in developing countries like India. Due to rapid growth of urbanization and industrialization in our country there is increase in road traffic accident related disability and deaths.The present study was conducted in the department of forensic medicine Govt. medical college Akola during January-December 2011 to analyze quantity and magnitude of death due to road traffic accident (RTA) and to provide epidemiological data so that preventive measures can be undertaken.Our study shows that Road traffic accidents account for 29.51% of deaths,majority of victims were males (81.29%) between age group 21-30 years (24.80%) and 31 -40 years (18.86%).Most commonly injured body region was head (57.37%). Pedestrians were the worst affected (34.69%) and maximum numbers of Road Traffic Accidents were seen during summer months(30.87%).

Key words: accident, death, autopsy, forensic, vehicle

Introduction

According to National Transportation planning and Research Center in every four minute one person either dies or gets injured due to the road traffic accidents (RTA). Two decades back RTA was the tenth among top ten causes of mortality in the country[2]. Today our country is undergoing a major economic and demographic transition which, leads to rapid industrialization, urbanization and motorization that may in turn increases the Road traffic accidents.

Many such RTAs are fatal and cause huge loss to nation in terms of loss of manpower. Moreover, if such victim happens to be an earning member then family suffers a lot. Therefore it is high time to formulate strategies and modalities to prevent such immature deaths. These strategies vary from place to place because of local and geographical differences. For formulating such planning data is essential. Akola, being a budding city, no such attempt was made previously and therefore there is a need for such study. Hence the present study was undertaken with an aim to provide the demographic profile of victims in fatal accidents and to provide pattern of vehicular accidents.

Material and methods

The present study is a retrospective study undertaken in the Department of Forensic Medicine and Toxicology, Government Medical College, Akola during the period from January 2011 to December 2011.

The present study includes total 366 victims of Road Traffic Accident who were brought to mortuary of Government Medical College and Hospital Akola for Medico legal post mortem Examination during the study period. General information of each case and autopsy findings were noted from autopsy report, inquest report and hospital record. All relevant information of each and every case was included in the study was then entered into the preformed proforma for observation and comparison with other studies.

Results

In the present study we found that road traffic accident accounts for 29.51% of cases brought to mortuary for medico legal postmortem examination. It was observed that there was a male predominance with men comprising of 81.24% of victims as compared to 18.76% women. Most of the victims of RTAs were from age group 21-30 years (24.80%) followed by 31-40 years (18.84%). It was noted that maximum fatalities were in summer months. It was noted that most commonly involved region was head (57.37%) followed by thorax (10.65%), and abdomen (7.92%) whereas in 11.74% had multiple regions involvement .

Pedestrians were the major victims of RTAs (34.69%), followed by passengers (31.4%), drivers (14.20%), bicycle riders (5.73%) and others comprises of (4.05%).

Table 1: Age wise Distribution of Case

Sr.No.	**Age group**	**No. of cases**
1	0 - 10	23
2	11 - 20	39
3	21 - 30	91
4	31 - 40	69
5	41 - 50	59
6	51 - 60	45
7	60 and above	40
Total		**366**

Table 2: Month wise Distribution of Cases

Sr.No.	**Month**	**No. of Cases**
1	January	39
2	February	23
3	March	27
4	April	29
5	May	45
6	June	39
7	July	19
8	August	21
9	September	24
10	October	37
11	November	39
12	December	24
	Total	**366**

Table 3: Distribution of cases according to body part injured

Sr.No.	**Region**	**No.of Cases**	**Percentage %**
1	Head	210	57.37%
2	Thorax	39	10.65%
3	Abdomen	29	7.92%
4	Limbs	45	12.29%
5	Multiple injuries	43	11.74%
	Total		366

Discussion

The incidence of RTAs deaths in current study was 29.51% similar to Santosh C et al whereas the findingsof the current study differ from Shouvanik et al(13.6%). This difference may be due to variation in somefactors like type, condition of roads, awareness and maintenance of rules of traffic among the people.

The present study had male predominance; our findings are in accordance with the findings of Shouvanik et al,Santosh et aland W.Odero et al. This is due to reason that males are the active members as they work more outdoors as compared to females and this exposes them to risk of meeting with an accident.

Current study showed that most commonly affected victims were from age group 21-30 years followed by 31-40 years. This is similar to findings of Pathak et al. This may be due to the fact that person of these age group lead a more active life, work outdoors, involve in many types of manual and technical work.

The present study revealed highest number of cases during summer months that are April to June and second peak during winter months that are October to November. These findings are in accordance with the findings of Shouvanik et al.The high number of fatalities during these months might be attributed to vacations to schools and offices, and therefore leading to more number of people traveling to places of pilgrimage, spent holidays and attend marriages and other ceremonies because of which number of vehicles as well as number travelers increases on roads.

In our study most commonly involved body region was head which is quite consistent with the findings of previous studiesas skull is most commonly involvedbody region in cases of motor vehicle accidents and falls, by direct or indirect transmission of force.Pedestrians were the worst affected victims in the current study which is in accordance with the study ofShouvaniket al[1]and Pathak etal[2]and Singh Harnametal[8].

Conclusion

Road traffic accidents are known to claim substantial number of lives in our country due to increase in the pace of mechanization, increase in number of vehicles, semi skilled drivers and ill maintained, inadequate roads for transportation.

Improvement in road structures, awareness about road safety measures and traffic rules among drivers, pedestrians and establishment of trauma care centers to provide rapid emergency services to victims are needed to reduce the morbidity and mortality of road traffic accidents.

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Case Report

ROLE OF DOCTOR IN INVESTIGATION OF ALLEGED CANNABIS CULTIVATION

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Case Report

ROLE OF DOCTOR IN INVESTIGATION OF ALLEGED CANNABIS CULTIVATION

Dr. D Ingale, Dr. A Mugadlimath, Dr. MA Bagali, Dr. S Tiwari, Dr. N Gupta, Dr. C Bhuyar

Abstract

As per the Narcotic Drugs and Psychotropic Substances Act, 1985[1] it is an offence to cultivate, process, transport, to have in the house or establish, sail or even purchase cannabis. Secret cultivation of cannabis & its consumption as well is an open secret in the form of Ganja smoking, Ramras, Majoon (the sweet containing cannabis during festivals). Under such circumstances investigation agencies have to use Panchas and experts concerned to identify the plant under cultivation, prepare & submit FIR, investigate and file the charge sheet. Use of expert in such cases is the discretion of investigation officer, failure to select suitable expert can not only damage the case by acquittal but also can invite legal action against the witness / expert. Such a case report is discussed, wherein doctor was made as expert to witness investigation of alleged cultivation of cannabis.

Key Words: Cannabis, marijuana, medical evidence

Introduction

Cannabis, also known as marijuana (from the Mexican Spanish marihuana), and by other nick-names (Weed, Pot and Herb) is a preparation of the Cannabis plant intended for use as a psychoactive drug and as medicine.[1] Pharmacologically, the principal psychoactive constituent of cannabis is tetrahydrocannabinol (THC); it is one of 400 compounds in the plant, including other cannabinoids, such as cannabidiol (CBD), cannabinol (CBN), and tetrahydrocannabivarin (THCV).[2]

Contemporary uses of cannabis are as a recreational drug, as religious or spiritual rites, or as medicine; the earliest recorded uses date from the 3rd millennium BC.[3] In 2004, the United Nations estimated that global consumption of cannabis indicated that approximately 4.0 percent of the adult world population (162 million people) used cannabis annually, and that approximately 0.6 percent (22.5 million) of people used cannabis daily. Since the early 20th century cannabis has been subjected to legal restrictions for its possession, use, and sale of cannabis preparations containing psychoactive cannabinoids. Currently its use is considered illegal in most countries of the world. The United Nations has said that cannabis is the most-used illicit drug in the world.[4]

Though NDPS act[5] does mention of holding inquiry into place of alleged illegal cultivation by calling experts at the scene, however unfortunately there is no mention as to the specific expert for the said purpose. Here is an interesting case report in which investigating authorities request medical officer of a PHC to act an expert in alleged cannabis cultivation. Facts of the case and its implications are discussed in the present case-report.

Case report

A medical officer working in Primary Health Centre in remote rural area of Bijapur District was called by the police to the scene of alleged cultivation of cannabis. At the scene the Medical officer was joined by the local panchas and the Panchanama was held. The alleged plant under cultivation among the Jowar field as decided by them was cannabis by morphology & smell. Police collected some samples of the plant. Same day night at 11 pm

the police came to Primary Health Centre with packets containing said plant during sleepy hours. Medical officer was requested to sign some documents (to be sent to FSL). The Doctor signed those document and packets without knowing the details mentioned therein. Few months later, the police brought the Forensic Science laboratory chemical analysis report to doctor. On perusal of FSL report, themedical officer issued opinion as 'The cultivated plant is Cannabis'. Two years later, in the month of August 2008, the medical officer received summons from the Hon'ble sessions court. The doctor attended the District Additional sessions court.

During deposition of evidence in the witness box under oath doctor deposed that though he had been to the said field of cultivation, but he did not preserve the sample & has only signed the packets which were brought by the police to his residence in the night.But according to police records the samples were preserved at the scene of cultivation. Hence the Public prosecutor declared the medical officer hostile and cross examined him. After the deposition and cross examination the Honorable presiding officer said"Doctor,you being a government officer, why action should not be initiated against you for not supporting prosecution? Accordingly, a show cause notice was issued to the medical officer through District Health Officer.

Discussion

Cultivation of cannabis or any other prohibited plants is an offence against the state; hence it necessitates legal inquiry in to its illegal cultivation after receipt of information. Though NDPS act[5] does mention of holding inquiry into place of alleged illegal cultivation by calling experts at the scene, however unfortunately there is no mention as to the specific expert for the said purpose. Hence investigating agencies catch hold of Medical officers, especially in rural areas for the purpose and complete the inquest formalities and file the charge sheet.

No information is available as to the role of doctors in investigation of a case of cannabis cultivation in the standard textbooks of Forensic Medicine and toxicology.[6,7 & 8]Now the question arises as to-

1. Whether doctors have the expertise to identify the plant? The answer shall be 'NO', since, though the doctorshave studied about toxicological aspects of various plants during the under graduate course, however they do not have any practical exposure of cultivation of such plants.
2. Horticulturist or Agricultural expertise services can be utilized for identification of the plant at scene of cultivation. However, the legal provisions as to the use of such an expert are not defined in the law. Even if such an expert was preferred by investigating agencies, still the questions remains, as to what is their practical experience in respect such toxicological plants?
3. Can services of forensic science experts be utilized for identification of plant under investigation of such alleged scene of cultivation? Forensic science experts by their qualification & routine practice only analyze the sample preserved and sent. Hence this expertise is not of use under such circumstances.

Under the Narcotic Drugs and Psychotropic Substances Act, 1985, **Punishment for contravention in relation to cannabis plant and cannabis:** Whoever, in contravention of any provisions of this Act or any rule or order made or condition of license granted there under. [5]

Drugs and Psychotropic Substances Act, 1985 **Procedure where seizure of goods liable to confiscation not practicable**.-Where it is not practicable to seize any goods (including standing crop) which are liable to confiscation under this Act, any officer duly authorized under section 42 may serve on the owner or person in possession of the goods, an order that he shall not remove, part with or otherwise deal with the goods except with the previous permission of such officer. [5]

Duty of land holder to give information of illegal cultivation.-Every holder of land shall give immediate information to any officer of the police or of any of the departments mentioned in section 42 of all the opium poppy, cannabis plant or coca plant which may be illegally cultivated within his land and every such holder of land who knowingly neglects to give such information, shall be liable to punishment. [5]

Conclusions

In reference to the above case following conclusions are drawn:

1. Doctors are not the experts to opine about a plant or poison by its mere physical appearance; hence one should not draw conclusive &dogmatic opinions without confirmatory reports from scientific labs (FSL). If compelled to do so one should resist or avoid by convincing the concerned authorities.
2. One should not sign any documents brought by any one unless the documents are prepared by themselves within the purview of their expertise.
3. One should be very careful while deposing the evidence before honorable court. They should limit their evidence to the contents of documents that are signed by them. Otherwise medical witness may be declared hostile and accordingly cross examined.
4. It necessitates amendment of the act by defining the expert, in the interest of the state. Department of prosecution which presents the fact to court of law knows importance of identity of such banned toxicological plants by the expert, to prove the guilt & punish the offender, hence appropriate directives in this regard should be made available to investigating officers.

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Case Report

HYPOXIC LIVER INJURY IN PROLONGED HYPOTENSION AND SEPSIS

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Case Report

HYPOXIC LIVER INJURY IN PROLONGED HYPOTENSION AND SEPSIS

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Abstract

Hypoxic liver injury is not an uncommon condition in critical care setup. This condition is characterized by a massive but transient increase in serum transaminase levels usually associated with hypoxia and persistent hypotension. A 25-year male was admitted with history of blunt trauma abdomen in road traffic accident. Subsequently patient had developed renal failure, sepsis and persistent hypotension. Hypoxic liver injury was an incidental finding at autopsy. We present a case report and discuss the importance of this condition as a co-morbid state affecting the prognosis.

Key words: Liver, hypoxia, hepatopathy, death, autopsy, ischemia, sepsis

Introduction

The liver is generally protected from ischemic insult because of dual blood supply via the hepatic artery and portal vein. Therefore true hepatic infarction is rare and its incidence varies from zero in 3,500 autopsies to one in 88 autopsies.[1] However, in critical care setting, hypoxic liver injury (HLI) appears to be more common than has been previously recognized with a reported prevalence of 0.6-1.5%. The identification of this condition is important as the mortality rate varies from 25-73% [2] .To draw attention towards this important issue, herein we are presenting a case report and discuss its importance as a co-morbid state.

Case report

A 25-year male was admitted to a critical care center with history of road traffic accident. The patient had sustained blunt trauma abdomen. His sigmoid and rectum was contused and undergone colostomy. During the course he developed renal failure and had regular hemodialysis. Subsequently patient developed sepsis and needed ionotropic and ventilatory support. In the initial period complete blood counts revealed hemoglobin: 10.5 g/dl, white blood cell count: 11,400 /cumm and platelet count: 2.75 lac/cumm. Biochemical investigations revealed blood urea: 300 mg/dl, serum creatinine 4 mg/dl, total bilirubin: 1.2 mg/dl, SGOT: 40 IU and SGPT: 23 IU. Subsequent hematological and biochemical investigations were not available for review. On 31st day after admission, patient sustained cardiorespiratory arrest and declared dead.

Autopsy examination revealed multiple ecchymotic areas over skin, icterus and infected tracheostomy, colostomy and laprotomy wound with laprotomy wound dehiscence. Brain was congested and oedematous. Pleural cavity contained 600 ml reddish colour fluid on each side. Lungs showed patchy consolidation. Epicardium showed multiple petechial hemorrhages. Peritoneal cavity contained 1000 ml turbid fluid with signs of peritonitis. Liver was enlarged weighing 2600 g. Cut surface of both lobes showed multiple areas of focal fatty infiltration with multiple necrotic areas in the parenchyma (Fig 1). Spleen was enlarged weighing 300 g. Suprarenals showed hemorrhages in the cortex. Sigmoid and rectum showed ischemic infarction. Microscopic examination revealed congested brain and spleen. Lungs showed congestion, oedema and bronco-pneumonia. Myocardium showed focal areas of necrosis with marked acute inflammatory infiltrate. Adrenal revealed congestion and loss of vacuolation. Liver showed congestion and coagulative necrosis with mononuclear cell

infiltration with presence of few areas of normal hepatic architecture with fatty change and chronic venous congestion (Fig 2).

Figure 1 cut surface of liver showing areas of necrosis and fatty infiltration

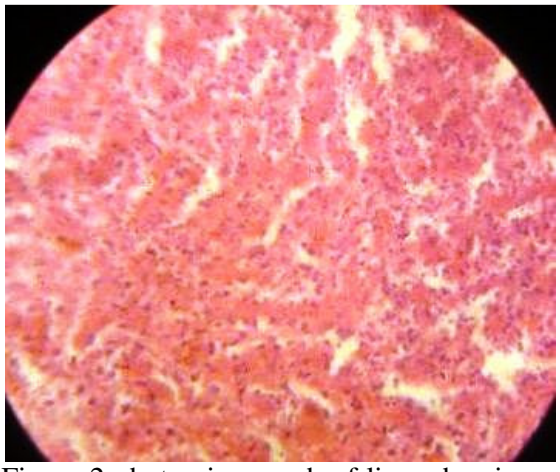

Figure 2 photomicrograph of liver showing coagulative necrosis with mononuclear cell infiltration (H and E, X 40)

Discussion

The liver receives about 20% to 25% of the cardiac output, 70% via the portal vein and 30% from the hepatic artery. The hepatic artery receives a fixed percentage of the cardiac output, which decreases as cardiac output decreases. Its blood flow varies inversely with that in the portal vein [3, 4]. Profound hepatic hypoperfusion (66% reduction of portal flow during ischemia and 80% reduction in hepatic artery flow during reperfusion) producing temporary acute hepatic dysfunction has been found in an experiment involving intestinal ischemia-reperfusion injury in rats.[5] From clinical and experimental studies, it has been found that liver is affected during certain hypotensive state; recognized as "hypoxic liver injury"[2, 6]. This disorder is often not suspected clinically but may be detected incidentally at autopsy.

HLI is also known as shock liver, hypoxic hepatitis, hypoxic hepatopathy or ischemic liver. HLI is due to inadequate oxygen uptake by the centrilobular hepatocytes resulting in necrosis. The most common cause is insufficient hepatic perfusion in the setting of passive liver congestion or chronic liver disease [3, 7]. Profound and prolonged shock, leading to low hepatic perfusion and hepatocytes hypoxia, appears important for the development of HLI. However, other pathogenic mechanisms have also been identified to cause HLI and include low blood flow secondary to congestive cardiac failure, blood loss, and hypoxia from sepsis or respiratory failure, inadequate oxygen extraction by the hepatocytes, chronic pericardial constriction and increase metabolic demands [7-11].

Clinically the manifestations include weakness, shortness of breath and right upper abdominal pain from enlarged, congested liver. Clinical appearance of jaundice is unusual. HLI is associated with transient and dramatic elevations of serum aminotransferase activity. The raised value occurs after 24-48 hours following hypoxic insult. Alanine transaminase (ALT) elevations greater than 20 times the normal level have been considered by some investigator to be the minimum requirement [3]. Similarly serum lactate may be elevated due to inadequate removal of lactate. Lactate dehydrogenase (LDH) level increases and the peak value reaches before transaminase levels. The international normalized ratio (INR) may increase, usually after the peak in the transaminase level. The prothrombin time and partial prothromboplastin may be raised. Microscopic examination shows centrilobular necrosis.

The diagnosis has to be established on clinical and biochemical criteria, as role of interventional procedure such as biopsy remains limited. The condition has to be differentiated from viral hepatitis, drug-induced/toxic hepatitis and hepatic trauma. Sudden and transient increase in transaminase level differentiates between HLI, toxic hepatitis and viral hepatitis. The transaminase level in viral hepatitis decreases slowly in comparison with HLI and toxic/drug induced hepatitis. Similarly elevation of INR occurs early in HLI. The ALT-LDH ratio is considerably low in HLI and toxic hepatitis in comparison with viral hepatitis. Histologically venous congestion with centrilobular necrosis will be evident in HLI whereas hyperplasia, panlobular infiltration with mononuclear cells, inflammation, variable degree of cholestasis and regeneration, characteristic features of hepatitis, will be absent.

In the present case, the patient was admitted for a month and developed renal failure and sepsis. In the later course he required ventilatory assistance and inotropic support since he was having persistent hypotension. He was given blood components to correct coagulopathy. Unfortunately subsequent hematological or biochemical investigation reports were not available for evaluation. HLI was an incidental finding noted at autopsy and was thought to be due hypoxia, resulting from prolonged hypotension and sepsis. It was demonstrated by Shibayama that in addition to circulatory disturbances, sepsis could also cause liver injury [10]. In septic shock, HLI is produced due to increased metabolic demands of hepatocytes along with their inability to extract adequate oxygen from the blood [2,3]. The presence of hypoxia in the present case can also be demonstrated by the presence of focal fatty deposition. It was considered that hypoxia is a key factor and inadequate local tissue perfusion leads to focal fatty infiltration in the hypoperfused area [12, 13].

On most of the occasions, HLI have a benign course and the transaminase levels return rapidly to normal state with the correction of the underlying cause. However, in about 6% of cases, HLI may progress to acute liver failure [14].

While dealing in autopsy practice, identification and interpretation of this state is vital to arrive at a conclusion. Such findings are frequent in patients who are hospitalized and later require ventilatory assistance and inotropic support and have multi-organ failure. Presence of such finding indicates a state of prolonged persistent hypotension and/or sepsis.

In conclusion, HLI is not rare in critical care setting and this reversible subclinical condition needs attention since this co-morbid state may affect the outcome of the underlying condition. Similarly identification of this state is essential for forensic pathologist to arrive at a conclusion.

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Case Report

CONCEALED HOMICIDE

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Case Report

CONCEALED HOMICIDE

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Abstract

Adulterous relations sometimes force people to commit certain crimes including murder. After committing the crime they may try to conceal homicide, in order to go scot free and to lead a life of a respectable person. But the role of Forensic expert is of paramount importance to give justice to the culprit. The paper projects the features of ligature strangulation, mentality of perpetrators who after strangling the victim, tried to hide the crime by disposing of the dead body by burning and the role of Forensic expert helpful in bringing the culprit to book.

Keywords: Conceal Homicide, Ligature strangulation, Burning, Forensic expert.

Introduction

Compression of the neck by a ligature is not an uncommon method of homicide. Burning of the body to try to conceal the homicide may complicate the situation by making it difficult to interpret the findings. We hereby report a case of homicidal ligature strangulation with extensive burning of the body and the role of forensic experts in unearthing the facts.

Case report

A black bag found at the roadside in Mumbai, bystanders informed the local police. On opening the bag by police officer found a dead body of unknown, 20-25 years, male, wearing blue colour T-shirt, faint black underwear, yellow nylon rope was encircled around the neck and burn injuries over the body. The hands and legs of body were tied with the yellow nylon rope, sticking bandage was encircled around the face. An onion was thrust inside the oral cavity of the victim. Subsequently the dead body was identified by his father and relatives. Examination of the deceased body revealed moderate built, marked pallor with ligature strangulation associated with burns.

External injuries noted were:

1) Ligature strangulation mark around the neck with multiple scratch abrasions around the neck, face.
2) Contusion over the lips.
3) Abrasion over the left shoulder.
4) Burns over the body at places.

Internal examination of the body revealed:

1) Fracture of the greater cornue of hyoid bone.
2) Infiltration of the blood inthe neck tissues.
3) Contusion of the neck muscles.

The ligature mark over the neck was ante mortem.
The burn injuries over the body were post-mortem mostly to hide the crime by disposing of the dead body by burning after homicidal strangulation.

Observations

Externally there was ligature mark around the neck with scratch abrasions suggesting of strangulation. On dissection of the neck, contusion of paratracheal area, fracture of greater cornue of hyoid bone, contusion over 2nd to 5th tracheal ring anterolaterally. Onion was thrust inside the oral cavity, congestion of the conjunctive, dried blood stains at mouth and nose. There were superficial to deep burns over lower abdomen, back, thighs and genitalia. On dissection there was no red line of demarcation, no infiltration of blood at burn areas. Indicating the burns werepost-mortem in nature.

During autopsy viscera was preserved to rule out poisoning. On Chemical analysis, no poison was detected in viscera.

Photograph 1 : Showing burn injuries. (front view)

Photograph 2 : Showing burn injuries. (back view)

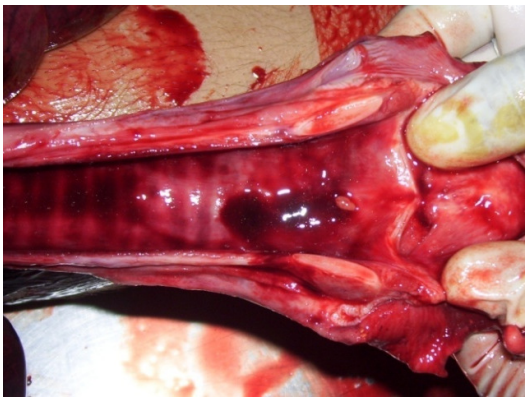
Photograph 3: Showing onion thrushed in oral cavity.

Photograph 4 : Showing contusion of lips.

Photograph 5: Showing ligature strangulation. (front view)

Photograph 6: Showing ligature strangulation. (left view)

Photograph 7: Showing ligature strangulation. (right view)



Photograph8: Showing contused neck tissues.

Opinion

The cause of death was opined as, Asphyxia, as a result of compression of neck due to strangulation with post-mortem burn injuries.

Discussion

Discovering a burnt body in an unfamiliar, outdoor or abandoned place, scene or autopsy findings attributable to a violent death, evidence of use of accelerant and absence of vitality signs are factors in concealed homicidal death. Laryngeal injuries secondary to manual strangulation are seen more often by the forensic expert than by the otolaryngologist. Forces sufficient to fracture thyroid and cricoids cartilage are usually sufficient to cause acute asphyxia and death. [1,2] Strangulation is one of the oldest and widely used methods of committing murder in the Indian subcontinent. It is usually carried out by constricting the neck either with the hands, elbow or other parts of body or by ligature, stick and the like. [3-5] The paper projects the features of homicidal strangulation, mentality of perpetrators who after strangling the victim, tried to hide the crime by disposing of the dead body by burning and the role of forensic expert in the bringing the culprit to book.

Conclusion

1) The laryngohyoid injuries provide helpful information in the differentiation of suicide from homicide.
2) Reveals the mentality of perpetrators who, after strangling the victim, tried to hide the crime by disposing of the dead body by burning.
3) The forensic expert can help the judiciary in particular and public at large in bringing the culprit (accused) to book and justice to the departed soul (victim).

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2) Dr. G. S. Chavan, Associate Professor, Department of Forensic Medicine, Grant Government Medical College and Sir J.J. Hospital, Mumbai 08.
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Case report

CONTRADICTORY HISTORY: ROLE OF FORENSIC EXPERT

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Case report

CONTRADICTORY HISTORY: ROLE OF FORENSIC EXPERT

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Abstract

The role of Forensic expert is of paramount importance to give justice to the culprit and bring the culprit to book. In this case, the forensic experts could project the features of contradictory history with no obvious documentary evidences which was ruled out by standard autopsy which revealed the fact that the case was of head injury.

Keywords: Contradictory history, standard autopsy.

Introduction

Sudden death occurs due to natural pathology and unnatural causes. In unnatural cases, circumstances are enveloped in mystery, obscurity and unreliable statements and more recently concealed documentary evidences. The reason behind this action may be personal, occupational or social. The contradictory documentary evidence and history can be easily overcome by Forensic expert by complete standard autopsy. [1-3]

Case Report

A dead body of 32 years male was brought for autopsy at Sir JJ Hospital Morgue. The documentary evidence did not show any external injury. The history revealed by authorities was of sudden unconsciousness with vomiting, and the deceased having died before admission at hospital. There was no past history of any disease. Deceased was moderately built. External examination of body revealed healed abrasion over left knee joint.

Internal examination of the body revealed:

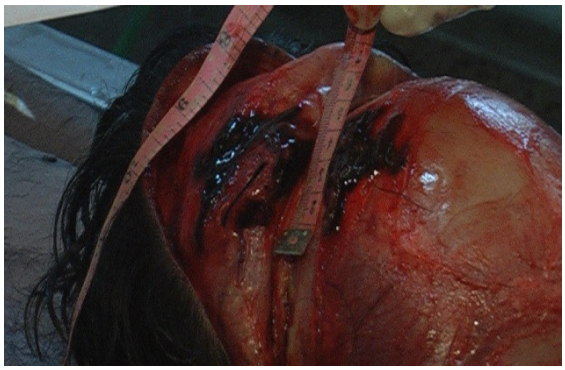
1. Under scalp contusion with haematoma over left frontal region.
2. Under scalp contusion with haematoma over left parieto-temporo-occipital region.
3. Subarachnoid haemorrhage over frontal lobe.

The injuries were ante mortem in nature and were sufficient to cause death in ordinary course of nature. Visera was preserved to rule out poisoning and tissues were preserved to rule out pathological disease. The provisional report was given as under scalp contusion with subarachnoid haemorrhage.

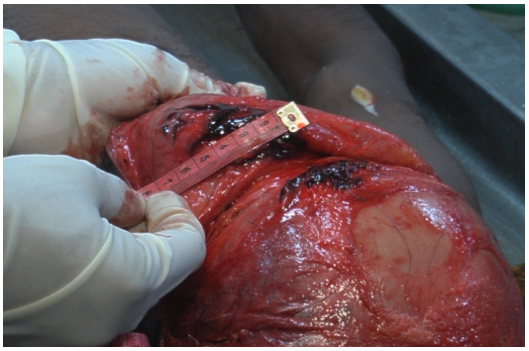
Discussion

Contusions to the head are mostly associated with the contre coup injuries to the brain and are in relation to the site of scalp injury. [1] The same findings were noted in this case. The accidental traumatic head injuries are relatively rare injuries. It is essential that they can be identified as consistent with an accidental mechanism so that an erroneous diagnosis of inflicted injury is not made. [2] In our case although there was contradictory history, diagnosis of head injury was achieved by performing standard autopsy. Similarly Sharkery EJ, in his study had investigated the pathophysiological nature of head injuries caused by blunt force trauma, specifically in relation to the incidence and formation of a laceration. He experimented on a model devised to assess the force required to cause damage to the scalp and underlying skull of porcine specimens following a single front-parietal impact. The applied force used could be correlated with resultant injuries and as such aided pathological

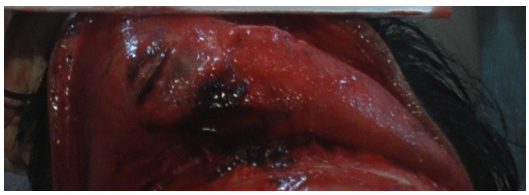
investigation in differentiation between falls and blows.[3] The same theory was applied to solve the didactic nature of our case.



Photograph 1: Showing Under scalp contusion with haematoma.

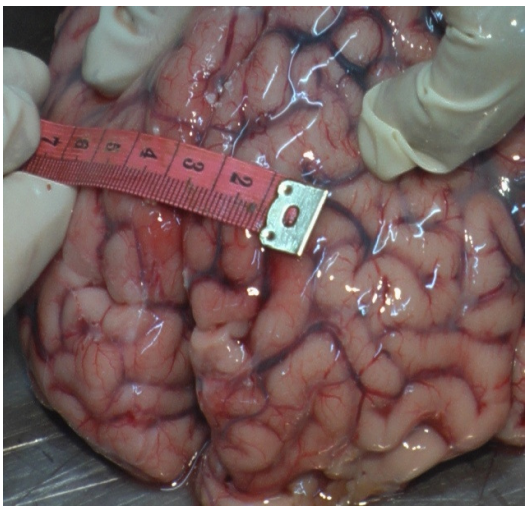


Photograph 2: Showing under scalp contusion with haematoma.



Photograph 3: Showing under scalp contusion with haematoma.

Photograph 5: Showing subarachnoid haemorrhage.



Photograph 4: Showing subarachnoid haemorrhage.

Conclusion

Forensic expert can help the judiciary in particular case of contradictory history by standard autopsy and brings the culprit to book.

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1. Dr. B. G. Chikhalkar, Associate Professor, Department of Forensic Medicine, Grant Government Medical College and Sir J.J.Hospital, Mumbai 08.
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Review Article

MYOTONIC DYSTROPHY: A RARE CAUSE OF ACQUIRED MYOGENIC PTOSIS

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Review Article

MYOTONIC DYSTROPHY: A RARE CAUSE OF ACQUIRED MYOGENIC PTOSIS

Dr. BS Khaire, Dr.US Khaire, Dr. PW More, Dr. AA Vare, Dr. SS Chaugule

Abstract

Myogenic ptosis is a rare type of acquired blepharoptosis and can be found in localized or diffuse muscular disease, such as the muscular dystrophies. The muscular dystrophies are distinguishable by their mode of inheritance and clinical features. Blepharoptosis is a clinical sign of certain muscular dystrophies, including myotonic dystrophy, Chronic Progressive External Ophthalmoplegia (CPEO), and oculopharyngeal muscular dystrophy.

We present a case report of a 55 years old lady presenting with bilateral acquired ptosis with limitation of extraocular movements. Clinical presentation, differential diagnosis and management options of acquired myogenic ptosis are discussed.

Myotonic dystrophy is a variable genetic disorder with multisystem involvement. Central nervous, cardiovascular, musculoskeletal, gastrointestinal, reproductive systems are the ones commonly affected. The ocular symptoms include bilateral acquired ptosis without ophthalmoplegia, blue dot or Christmas tree cataract and retinal pigment epithelial changes.

Key words: Myogenic acquired ptosis, myotonic dystrophy, cataract, ophthalmoplegia.

Key message:

Late onset Myotonic dystrophy, a hereditary disorder of muscular origin should be kept in mind as a cause of acquired ptosis in a patient presenting with recent onset bilateral ptosis with limitation of extraocular movements. Characteristic finding in EMG and negative neostigmine test confirms diagnosis of Myotonic dystrophy. Other ocular manifestations like cataract, RPE changes, sluggish reacting pupils along with multisystem involvement like musculoskeletal system, cardiovascular system, gastrointestinal system make the management challenging with a guarded prognosis.

Introduction:

Blepheroptosis can be of congenital or acquired type. Acquired ptosis being the less common type is further divided into neurogenic, aponeurotic, mechanical and myogenic varieties. Myogenic ptosis is a rare type of acquired blepharoptosis and can be found in localized or diffuse muscular disease, such as the muscular dystrophies.

Myotonic dystrophy is one of the most common forms of inherited muscle disease; it is estimated that one person in every 20,000 is affected with DM. [1] The ocular involvement in myotonic dystrophy occurs commonly in the form of ptosis, extraocular muscle weakness and blue dot/ christmas tree cataracts. Cataracts are useful for diagnosing myotonic dystrophy since they are present in nearly all patients with the condition.[3] Other features of myotonic dystrophy include sluggish pupillary response, low intraocular pressure, and retinal degeneration.[4]

Case report:

A 55 years old female patient presented with complaints of drooping of her eyelids and decreased visual acuity in both eyes since 6 months. On ophthalmological examination her visual acuity was 20/80 in both eyes with normal intraocular pressure. There was severe

ptosis (4mm) and 15^0 Exotropia in RE and Mild ptosis (2 mm) in LE. Levator function was 2 mm in RE and 5 mm in LE. Pupillary reaction was sluggish in both eyes. Extraocular movements were found to be partially restricted in medial and upward direction in RE. On slit lamp examination lens showed presence of early peripheral cortical cataract and on fundus examination no abnormality was detected.

On detailed general and systemic examination following signs were noted:

General examination: Drowsiness, early fatiguability, myopathic facies with frontal baldness.

Musculoskeletal system examination: Percussion myotonia, inability of muscles to relax, Sternocledomastoid muscle atrophy, temporalis and masseter muscle atrophy.

Central nervous system examination: Distal muscle weakness.

Rest systemic examination did not show any significant abnormality.

All the routine blood, urine investigations, electrocardiography, thyroid function test were within normal limits.

These findings pointed towards a muscular pathology. The EMG study carried out suggested primary muscle disease. Possible diagnosis of myesthenia gravis or muscular dystrophy was made. Neostigmine test (1.5mg IM Neostigmine) and ice pack test were carried to check for Myesthenia gravis. Both the tests were inconclusive, ruling out Myasthenia.

Figure 1: RE Moderate acquired ptosis with 15^0 exotropia with LE Mild acquired ptosis.

Figure 2: RE Moderate acquired ptosis with 15^0 exotropia with LE Mild acquired ptosis.

Figure 3: Percussion Myotonia

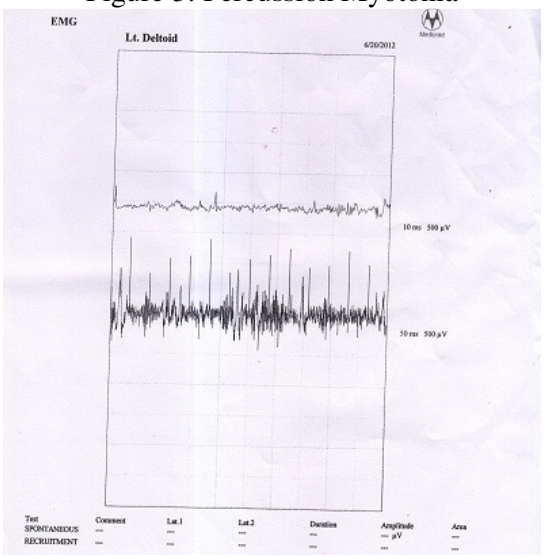

Figure 4: EMG Graph suggesting primary muscle disease.

Discussion

Myotonic dystrophy is an inherited disorder accompanied by progressive wasting and weakness of the distal muscles and myotonia.[2] Cases of myotonic dystrophy are generally genetically classified as one of two types: **Type 1** myotonic dystrophy has amplifications of an unstable trinucleotide CTG repeat located on chromosome 19, while **Type 2** has CCTG expansion on chromosome 3. The myotonic dystrophy is described as mild, classical or congenital according to the age of presentation and severity of symptoms.

Histologically, myotonic dystrophy is characterized by degenerative changes of skeletal muscle including disruption of myofilaments and sarcoplasmic reticulum, focal accumulation of mitochondria, and eventually atrophy and fibrosis of muscles.[5] The distal musculature is usually the first to be affected. Myotonia is often the initial symptom, which results from delayed relaxation of skeletal muscle after contraction. Symptoms are exacerbated with cold, excitement, and fatigue. Patients often develop a characteristic myopathic facies, presenting with blepharoptosis, frontal balding, and wasting of the temporalis masseter muscle. Ocular findings include ptosis, blepharospasm, ophthalmoplegia (similar to CPEO), pigmentary retinopathy, “Christmas tree” cataracts, and miotic pupils.[6]

Associated systemic findings include low intelligence, insulin resistance, cardiac conduction abnormalities, and testicular and uterine atrophy.

Management of such cases will include ptosis correction with frontalis sling using autogenous fascia lata. This line of management faces mainly following two difficulties:

1. Poor eye protective mechanisms as poor Bell's phenomenon, incomplete lid closure increase risk of exposure keratopathy.[8]
2. Anaesthetic complications due to administration of muscle relaxants in such patients dictate risk of cardiorespiratory arrest. [7]

Management of cataract includes performing phacoemulsification followed by posterior chamber IOL implantation. The visual prognosis remains guarded due to possible retinal pigment epithelium changes in the fundus.[4]

Thus Myotonic dystrophy forms a rare cause of acquired ptosis. It is a hereditary disorder causing acquired myogenic ptosis, cataract and retinal pigment epithelial changes. As ophthalmologists, the cases should be treated with special attention considering the multisystem involvement. The risks and benefits for the individual patient should be kept in mind while planning for both ptosis correction and cataract extraction.

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Review Article

CAPITAL PUNISHMENT

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Review Article

CAPITAL PUNISHMENT

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On 21st November 2012 Ajmal Kasab was judicially hanged in Yerawada jail at Pune. India showed to the world that there is zero tolerance for any terror attack anywhere. After this, there was vociferous discussion and endless arguments about death penalty its pros and cons etc. In last few weeks we all have heard and read enough about death sentences to be extended in case of Saroabjeet Singh and Guru Afzal. Let us not talk about the politics involved in this issue but this matter has opened the fresh debate on capital punishment. As such, death penalty is in practice for ages and the debate on continuation or abolition of this punishment is also centuries old.

If we look back into the history of human civilization there are many reports of death sentence being awarded for different crimes in ancient times. The crimes and the laws are well mentioned in the ancient literature. An eye for an eye or an arm for an arm which was the hallmark of barbarian era or life for life that is death penalty of the present civilized world are two sides of the same coin.

An appraisal of the administration of criminal justice of ancient times reveals that death penalty was commonly used in cases of heinous crimes. The common modes of inflicting death sentence on the offender were crucification, drowning, burning, boiling, beheading, throwing before wild beasts, flaying or skinning off alive, hurling the offender from rock, stoning, strangling, amputating, shooting by gun or starving him to death.

Ancient Romans accepted the deterrent value of death penalty. The Greek penal system also provided death sentence for many offences. The offenders were stripped, tarred and sent to death publicly.[1]

Henry VIII (1491 – 1541 A.D.) who reigned in England for over fifty years was particularly infamous for his brutality towards the condemned prisoners. The history of capital punishment in England for the last 200 years recorded a continuous decline in execution of this sentence.

British Royal Commission on capital punishment was appointed in 1949 to examine the problem. As a result of the findings of this commission death sentence was suspended in England and Wales for five years from 1965 and was finally abolished by the end of 1969.[1]

The penal law of Ceylon abolished capital punishment in 1956 but it had to be reintroduced as a measure of social defense consequent to gruesome murder of late Prime Minister Mr. Bhandarnaike.[1]

Recent trend in America is to restrict capital punishment only to the offence of murder and rape.

The countries which have abolished capital punishment, notably, are Germany, Austria, Scandinavia, Netherlands, Denmark and some Latin American States and they reported no ill effects of abolition. As of now more than 100 countries in the world have abolished the capital punishment. India is still one such country where capital punishment is practiced even today.

The Supreme Court of India has ruled that capital punishment may be awarded in following- [2]

1) Waging war against the Government Section -121 IPC
2) Abetment of mutiny - IPC 132

3) Giving or fabricating false evidence leading to procure one's conviction for capital offence- IPC 194
4) Murder- IPC 302
5) Murder by a person undergoing a term of life imprisonment- IPC 303
6) Abetment of suicide by child or insane person- IPC 305
7) Attempt to murder by a life convict- IPC 396
8) Dacoity with murder- IPC 396

At present the common modes of execution of death sentence which are in vogue in different parts of the world are electrocution, guillotine, shooting, gas chamber, hanging, lethal injection etc.[3]

One of the methods is Gas chamber – It consists of a tall, hexagonal, steel and glass vault. It is slightly more than 8 feet high and about 6 ½ feet in diameter. Five sides of the grey steel plate hexagon include heavy windows. The inside contains one metal chair with a mesh bottom. Usually Potassium Cyanide crystals or tablets are dropped into hydrochloric acid, producing hydrocyanic gas. After pronouncement of death, the chamber is evacuated through carbon and neutralizing filters. Gas masked crews decontaminate the body with a bleach solution.[4]

Another method practiced is use of Lethal Injection- This involves the continuous intravenous injection of lethal quantity of a short acting barbiturate in combination with a chemical paralytic agent. Commonly used drugs are sodium pentothal and pancurium bromide (stops respiration) and potassium chloride (stops heart). The sedative is usually administered first.[4]

In some states Electrocution is the method of execution where the electric chair or ' The Chair' as it is known, is used. The 2000 volts of electricity at an average of nine amps is applied to the head of the prisoner with each 'Shock' sequence lasting approximately 35 – 40 seconds.[4]

Hanging is the method practiced even in India. It is the most widely used method of execution in the world today. There are four main forms of hanging-[5]

1. Short or no drop hanging
2. Suspended hanging.
3. Standard drop hanging – where the prisoner drops to a predetermined depth, typically 4 – 6 feet.
4. Measured or Long drop – where the distance the person falls when the trap doors open is calculated according to the weight and physique of the person.

Firing is also used as a method of execution in few counties. There is reportedly no protocol for the procedure. There are usually five men, one of whom will use a blank bullet so that none of them knows who the real executioner was.

The procedure adopted in our state for execution of capital punishment is as per the Maharashtra Prisons Rules, 1971. According to these rules a 'convict' means a prisoner who is sentenced to death. On admission of a convict in a prison, the superintendent shall report the admission to the State Government. He shall also report to the State Government the date fixed for his execution by the court of sessions after confirmation of the sentence of death by the High court and solicit orders of the State Government regarding date of his execution. Every convict shall, from the date of his admission to a prison, be confined to a cell in a special yard, apart from all other prisoners as required by section 30 of the Act. The state Government shall fix the date of the execution of a convict if his/her 'Mercy Petition' is rejected. The convict and relatives shall be informed about the date of execution by the superintendent.[6]

All executions shall take place at the prison to which the warrant is directed unless expressly ordered otherwise in the warrant. They shall usually be carried out in a special enclosure attached to or within the walls of the prison. No convict shall be executed on a day which has been notified as a public holiday.[6]

Execution by hanging is usually done in early morning between 4 – 5 am. A trial is taken with a dummy to determine the height of drop and the duration of suspension, evening before the execution.[7] As a rule a bag of sand weighing 1 ½ times the weight of the convict to be hanged is used and dropped for a distance between 1.830 – 2.440 meter, it affords a safe test of the rope. Two spare ropes for each convict are kept ready. If a prisoner weights less than 45.360kg., he shall be given a drop of 2.440 meters, if between 45.360kg.- 60.330 kg. –a drop of 2.290m. if weight > 60.330 but not > 75.300 kg. –a drop of 2.130 m.[6,7]

The measurement of the convict's neck, height of the prisoner and the height from the drop shutter are also considered.[7]

The Superintendent, Deputy Superintendent, Senior Jailor and the Medical Officer shall be present at all executions. An Executive Magistrate deputed by the District magistrate is also present. The body shall remain suspended for 30 min. – 1hr. before being taken down and until the Medical Officer has certified that the life is extinct.[6]

As with other issues capital punishment also has its supporters as well as those who are for abolition of capital punishment. The people who want capital punishment to be continued are known as 'Retentionists' and those against are known as 'Abolitionists'.

The arguments against capital punishment are many but the pleas advanced in its favour are few. Any punishment is supposed to be for the protection of society and for the reformation of the criminal. The purpose of capital punishment is to prevent the same criminals from repeating their crime and by acting as a deterrent to other criminals and potential criminals. But in this respect capital punishment has proved to be a failure as is evident from criminal statistics of those countries where the punishment is in force. Also many crimes are usually single acts of fury or passion. They are done at the spur of the moment. It is very unlikely that the man will repeat such act in future.[3]

Also yet to be answered question is whether there can be more effective deterrents in comparison to capital punishment. Capital punishment is irrevocable and the error of justice cannot be rectified. Innocent people have been hanged in such circumstances in the past. Similarly in India there is great divide between the rich and poor. The rich can always get best legal services but the poor may not be able to even afford a lawyer to fight his case till the end. So it is possible that rich criminals might escape punishment but the poor one might easily reach gallows. The following case will elucidate the above point. In August 2000 a case was registered against Rameshwar & Ors under IPC 302.The sessions court Jhansi convicted all with life term. Their appeal was turned down by Allahabad High Court in 2009. The victim Bhagwan Dass reappeared in Dcemeber2010.The case was studied by the Supreme Court on 4/11/111 and looking at the facts the Supreme court ordered immediate release of Rameshwar & Ors. This was possible as the accused were not sentenced to death but were serving a life term.[8]

People who are against capital punishment have recommended other types of punishment. Government can isolate such murderers in special institutions where they can be humanely treated as patients or people of unsound mind. This can be made as a general campaign of educative and remedial treatment of crime.

In the year 2000, Amnesty international launched a campaign to secure a worldwide ban on the use of capital punishment. More than 100 countries have formally or informally

abandoned the use of capital punishment. WHO also has appealed to all countries to abolish capital punishment.

As against abolitionists there are many strong retentionists too who firmly believe in continuation of capital punishment. The people who are against capital punishment only think of the criminal. They should also think of the families that are broken apart because of the acts of criminals. If we do not punish the criminal then we throw our society into chaos and let the criminals do freely what they want.[3] Those against capital punishment argue that forms of execution are horrible. Some say that capital punishment is a harsh and uncivilized way of treating criminals. But it should be realized that these criminals do not care about the lives of those they destroyed. Death penalty can never bring back the loved one to the families that have lost them. It can never bring back the innocent lives that have been taken in cold blood. If we cannot join together and defeat crime, it will take us over. According to some, like olden days executions should be made public, so that everyone can see the consequences of crimes. In such circumstances the deterrent factor would most definitely rise.

So far we have seen the different aspects of capital punishment – offences where capital punishment is awardable, world and Indian scenario, procedure of execution of capital punishment and pro and anti views about legality of capital punishment.

Finally, the reader would be interested to known our view on capital punishment.
You all will agree, India has been a peace loving country, history is witness to this. Our cultures, our tradition, teach us to forgive the guilty or sinner and give him a chance to reform himself. We are no exception to this philosophy. We believe man has traversed miles of distance from barbarian era to present civilised status. With civilization comes understanding, tolerance and maturity. So we think capital punishment should be abolished, except for people involved in anti-national or terrorist activities. Other cases can be dealt with life imprisonment where the convict would get a chance to reform. At the same time the hard-core terrorists attacking religious or public places and even parliament and killing innocent people should be expeditiously tried by the judiciary and capital punishment if awarded in such cases be executed without undue delay.

But by abolition of capital punishment for other crimes let us take one more step towards civilization and social maturity.

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Review Article

POWERS OF MAGISTRATES (In India and in Maharashtra)

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Review Article

POWERS OF MAGISTRATES (In India and in Maharashtra)

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Abstract

There is discrepancy in various text books of Forensic Medicine available India regarding the powers of Magistrates as per section 29 of Cr. P.C. The author went through several text books as well as the "The Code of Criminal Procedure (Amendment) Act 2005" to satisfy his query. The author found that the powers of the magistrates in India have been amended & only two textbooks have been updated. On continuing research, he found that The State Governments may change these powers of Magistrates as they may deem fit and incidentally the Govt. of Maharashtra has done so.

Keywords: Magistrate; Cr P C; Powers; Amendment

Introduction:

The easiest way for a medical professional to know the powers of magistrates is to open any of the textbooks of Forensic Medicine, used commonly by the undergraduate students, and read the relevant portion. After going through several textbooks, the author found the discrepancies in several textbooks regarding The Powers of magistrates in India. So to satisfy the query, the author further researched the subject.

The authors went through several Forensic Medicine textbooks as well "The Code of Criminal Procedure (Amendment) Act 2005" and "Maharashtra Act No. XXVII of 2007" to clarify the subject matter.

Indian Forensic Medicine Books:

Several books commonly referred by the undergraduate students mention that the Chief Judicial Magistrate has the powers of imprisonment upto 7 years and to impose unlimited fine, those of Judicial Magistrate of first class to imprisonment upto 3 years and to impose fine upto Rs. 5000/- and those of Judicial magistrate of second class to imprison upto 1 year and to impose fine upto Rs. 1000/-. Whereas other books though similarly mention the powers of the magistrates to imprison for specified years, however they differ in the powers of these magistrates to impose fine. According to them, the powers to impose fine by Chief, First Class and Second Class judicial magistrates are Unlimited, Rs. 10,000/- and Rs. 5000/- respectively. [10 &11].

Table 1: Powers of magistrates to imprison and impose fine as mentioned in various books.

Class of Judicial Magistrates	As per textbooks of Forensic Medicine		Other books including CrPC	
	Imprisonment	Fine	Imprisonment	Fine
Chief	Up to 7 years	Unlimited	Up to 7 years	Unlimited
First Class	Up to 3 years	Up to Rs. **5,000/-**	Up to 3 years	Up to Rs. **10,000/-**
Second Class	Up to 1 year	Up to Rs. **1,000/-**	Up to 1 year	Up to Rs. **5,000/-**

This discrepancy / difference cited in various books led to search the source of this information. The Powers of Magistrates are given in Section 29 of Cr.PC.

The Code of Criminal Procedure (Amendment) Act 2005:

It was revealed that there was an amendment in Cr.PC. in 2005. As a result, "The Code of Criminal Procedure (Amendment) Act, 2005"; No. 25 of 2005 dated 23rd June, 2005[12], came into existence.

The said amendment being:

5. Amendment of section 29-

In section 29 of the principal act-

(a) in sub-section (2), for the words **"five thousand rupees"**, the words **"ten thousand rupees"** shall be substituted;

(b) in sub-section (3), for the words **"one thousand rupees"**, the words **"five thousand rupees"** shall be substituted.

Thus it was incontrovertibly concluded that the powers of magistrates shall be

Table 2: Powers of Magistrate as per The Code of Criminal Procedure (Amendment) Act, 2005

Class of Magistrate	**Imprisonment**	**Fine**
Chief Judicial Magistrate	Up to 7 years	Unlimited
Judicial Magistrate First Class	Up to 3 years	Upto 10,000/- rupees
Judicial Magistrate Second Class	Up to 1 years	Upto 5,000/- rupees

In addition to the above cited amendment, there was another amendment too; cited in para 2; which we found relevant to our query. This being:

2. **Amendment of section 20**[13] **–** In section 20 of the Code of Criminal Procedure, 1973 (2 of 1974) (hereinafter referred to as the principal Act), after sub-section (4), the following sub-section shall be inserted, namely:-

"(4A) The State Government may, by general or special order and subject to such control and directions as it may deem fit to impose, delegate its powers under sub-section (4) to the District Magistrate."

This subsequently led us to the search of whether in Maharashtra these changes were incorporated verbatim or whether Maharashtra has availed of the amended sub-section 4(A) of section 20 and made certain other changes in the powers of the magistrates.

Maharashtra Act No. XXVII of 2007:

Whereby, we came across "Maharashtra Act No. XXVII of 2007" dated 1st October, 2007[14]. (An Act further to amend the Code of Criminal Procedure, 1973, in its application to the State of Maharashtra)

In this Act, we found the following two sections relevant to us:-

1. (1) – This Act may be called the Code of Criminal Procedure (Maharashtra Amendment) Act, 2007.

2. In section 29 of the Code of Criminal Procedure, 1973, in its application to the State of Maharashtra,-

a. In sub-section (2), for the words **"ten thousand rupees"** the words **"fifty thousand rupees"** shall be substituted;

b. In sub-section (3), for the words **"five thousand rupees"** the words **"ten thousand rupees"** shall be substituted.

Thus we incontrovertibly concluded that the powers of magistrates in the State of Maharashtra shall be:

Table 3: Powers of magistrates as per the Maharashtra Act No. XXVII of 2007

Class of Magistrate	**Imprisonment**	**Fine**
Chief Judicial Magistrate	Upto 7 years	Unlimited
Judicial Magistrate First Class	Upto 3 years	Upto 50,000/- rupees
Judicial Magistrate Second Class	Upto 1 years	Upto 10,000/- rupees

Discussion:

Among the referred textbooks, only two textbooks updated the Powers of Magistrates according to "The Code of Criminal Procedure (Amendment) Act 2005". No textbook mentioned the state wise changes in the powers of magistrates. There are several questions regarding this subject matter being asked at many examinations including undergraduate & post-graduate entrance examinations. So it is necessary to update these textbooks by respective authors so as to avoid confusion among students as well as teachers.

Conclusion

The powers of magistrate prescribed by the Central Government and those by the Government of Maharashtra are:

Table 4: Powers of magistrates as per the central and state acts

Class of Magistrate	**Central Government**		**Government of Maharashtra**	
	Imprisonment	Fine	Imprisonment	Fine
Chief Judicial Magistrate	Upto 7 years	Unlimited	Upto 7 years	Unlimited
Judicial Magistrate First Class	Upto 3 years	Upto Rs. **10,000/-**	Upto 3 years	Upto Rs. **50,000/-**
Judicial Magistrate Second Class	Upto 1 years	Upto Rs. **5,000/-**	Upto 1 years	Upto Rs. **10,000/-**

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