

Original research article

ACADEMIC AND JUDICIAL SIGNIFICATION OF BILATERAL RADIOGRAPHIC EXAMINATION TO DETERMINE AGE

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Abstract:

Age determination by radiography of the relevant bones & joint is well accepted fact in Forensic medicine field. Sometimes it serves an important piece of evidence of age determination in sensitive criminal cases to fix the punishment for the accused especially in cases of Juvenile or young perpetrator. Estimating the age from ossification of bones roentgen graphically is very crucial in cases of Child sexual abuse & sexual assaults, trafficking, violent deaths and also in civil cases of inheritance, Child labor, marriage etc. But usual practice is to undertake the radiological examination unilaterally. Unilateral radiological examination can yield the incorrect results of age estimation which can lead to miscarriage of justice. There is little literature available regarding existence of bilateral difference of ossification of bones. The present research article throws light over the significant bilateral difference of skeletal maturity observed during radiological examination for age estimation.

Key Words: Age determination, Unilaterally, Evidence, bilateral difference, Justice.

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Abstract:

Age determination by radiography of the relevant bones & joint is well accepted fact in Forensic medicine field. Sometimes it serves an important piece of evidence of age determination in sensitive criminal cases to fix the punishment for the accused especially in cases of Juvenile or young perpetrator. Estimating the age from ossification of bones roentgen graphically is very crucial in cases of Child sexual abuse & sexual assaults, trafficking, violent deaths and also in civil cases of inheritance, Child labor, marriage etc. But usual practice is to undertake the radiological examination unilaterally. Unilateral radiological examination can yield the incorrect results of age estimation which can lead to miscarriage of justice. There is little literature available regarding existence of bilateral difference of ossification of bones. The present research article throws light over the significant bilateral difference of skeletal maturity observed during radiological examination for age estimation.

Key Words: Age determination, Unilaterally, Evidence, bilateral difference, Justice.

Introduction:

Forensic Osteology: Branch of Forensic Medicine which deals with the study of the bones. Determination of the age of an individual from the appearance and the fusion of the ossification centres is a well-accepted fact in the field of Medical and Legal profession¹. Epiphysis of the bones unites during age periods which are remarkably constant for a particular epiphysis. In law the, crime and punishment is entirely based on criminal responsibility and this in turn depend on the age of a person².The estimation of age plays an important role in Medicolegal work. Age is helpful in identification of an individual which in turn is helpful in both civil and criminal cases. In the living, age determination is the most important issue to the court and to the common citizens as well. It is essential to establish the identity of the person at the time of admission to school, colleges and institutes or while competing in the sports, tournament at regional, state and national, international level.

Legal Preview: In *Biswanath Ghosh v state*(1957) in the present state of development of and the present state of our knowledge, we must proceed on evidence of age furnished by the ossification test³.

- In *Laimayum Tonjou v Manipur administration* (1962) stated that the test of ossification of bones is of value in determining age where it is to be determined whether the age of a girl is below 15 years and X-ray examination of the bones is absolutely necessary.
- In *Alekh Prasad v state* (1964) stated that if the other evidence of age is wholly unsatisfactory, the ossification test may be accepted as a surer ground for determination of age particularly when the accused gets a benefit of doubt on that basis.
- In *Paramjit v state of Himachal Pradesh* (1987) stated that opinion based on fusion of epiphysis of the bones is more trustworthy.

Background for the study

In the males the centers appear earlier on the right than on the left side, but this preference is indeterminate in females⁴. It was observed that there is no appreciable difference in the age of complete union on both right and left side of the body⁵. The results showed that the sequence of appearance of Scaphoid, Trapezium and Trapezoid is masculine feature with earlier appearance in left Wrist⁶. It has been stated that "Owing to the variations in climatic, dietetic, hereditary and other factors affecting the people of the different provinces of India it cannot be reasonably expected to formulate a uniform standard for the determination of age of the union of epiphyses for the whole of India⁷. The variation of one year or two on either side in the opinion regarding age based on ossification test⁸. Relying upon a judgment of the Supreme Court in *Jaya Mala v Home Secretary, Government of Jammu and Kashmir (1982)* and the Defence Council submitted that the Court could take notice that the marginal error in age ascertained by radiological examination is two years on either side. It was, therefore, decided to reinvestigate the problem in the central part of India by radiological examination, taking care that adequate material was examined and only those subjects investigated whose ages has been recorded with reasonable degree of accuracy. Present study is being undertaken in indigenous population of central India from ossification around Wrist and Elbow joints roentgen graphically.

Aims and Objectives:

- To estimate the age from ossification of lower end of Ulna bone of Wrist joint in relevant Subjects in central India.
- To assess the age specific difference in ossification of lower end of Ulna bone.
- To assess and to compare male and female sexual difference in ossification of bones of lower end of Ulna bone.
- To study the difference in right and left side in ossification of lower end of Ulna bone.
- To assess and evaluate the difference in the ossification of bones of lower end of Ulna bone in Central part of the India with other part of India on the basis of literature available.
- To compare the deduced data with previously available data of other countries.

Materials and Methods:

The study was carried out with the objective to assess the general skeletal maturity of subjects Central India. Total one hundred and four individuals (104) were taken in this study from age ranging from zero to twenty years (0-20).

The individual was selected from the following sources:

- Students from the Primary school, Secondary school, High school and Art, Science, and Nursing Colleges.
- Children and infants admitted in Hospital for treatment purpose.
The individual chosen for the study were evaluated and confirmed for the following:
 - They are born to parents native of Central India and lived here since birth.
 - They have authentic documentation of their date of birth. (Birth certificate, School leaving certificate, Hospital records, School records)
 - The subjects should not have any bony deformity or pathology, congenital malformation, nutritional deficiency, endocrinal disorders, history of chronic drug intake (e.g.) anti-epileptic drugs, steroids and chronic illness thus affecting the skeletal growth and development of the individual.
 - Individual involved in study were predominately right handed.

Consent and permission for the study

- A written consent was obtained from the individuals personally those who are above the age of 12 years.
- For individuals those who are below the age of 12 years, consent was taken from the parents, guardians or respective head of the institute.
- Permission of Ethical Committee was obtained by submitting the title and synopsis of the study.

Procedure of Radiography

After taking the written consent the thorough physical examination and radiological evaluation was done. **Training of Researcher was undertaken to get well acquainted with the all radiological procedures essential for X-Ray examination and developing X-Ray films.** Skeletal maturity was evaluated according to the **Jits and Kulkarnis classification** of four stages, **Appearance, Non fusion, Partial fusion, and complete fusion** (abbreviated as **“AP”, “NF”, “PF”, “CF”** respectively). The master chart is prepared and tabulated as per code number given above. It is classified, analysed and compared with known standards. Data analysis was done in P4 computer using HPSS software. At the end conclusions were drawn which are compared with available results of various previous studies. Critical evaluation of the results was done

Results:

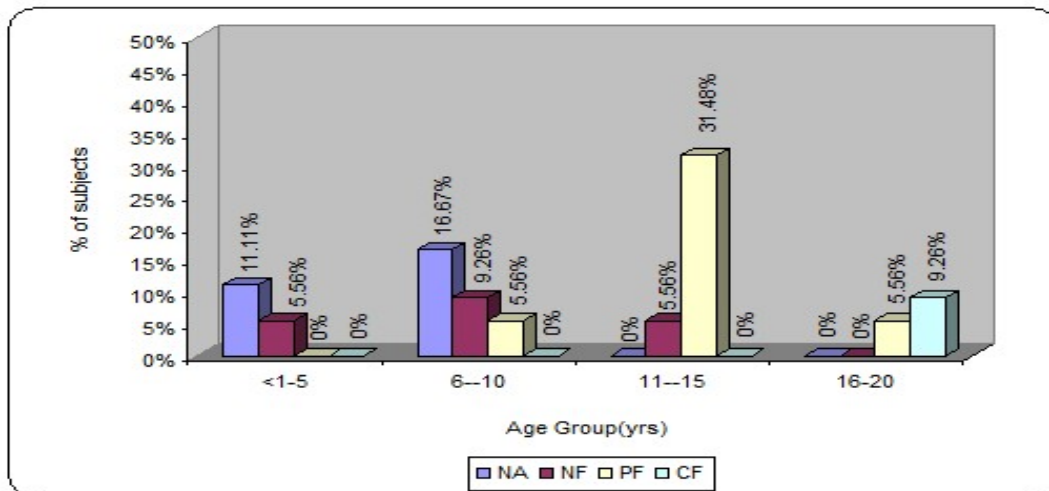
1) Table showing ossification of distal end of Ulna in Males on Right side.

Age in yr	NA	NF	PF	CF	Total
<1-5	6(11.11%)	3(5.56%)	0(0%)	0(0%)	9(16.67%)
6-10	9(16.67%)	5(9.26%)	3(5.56%)	0(0%)	17(31.48%)
11-15	0(0%)	3(5.56%)	17(31.48%)	0(0%)	20(37.04%)
16-20	0(0%)	0(0%)	3(5.56%)	5(9.26%)	8(14.81%)
Total	15(27.78%)	11(20.37%)	23(42.59%)	5(9.26%)	54(100%)

2x-value: 63.45, p-value: P<0.0001,S

Distal End of Ulna was appeared and non fused in 3(5.56%) subjects in <1-5 age group and completely fused in 5(9.26%) subjects in 16-20 age group.

Graph showing ossification of distal end of Ulna in Males on Right side.

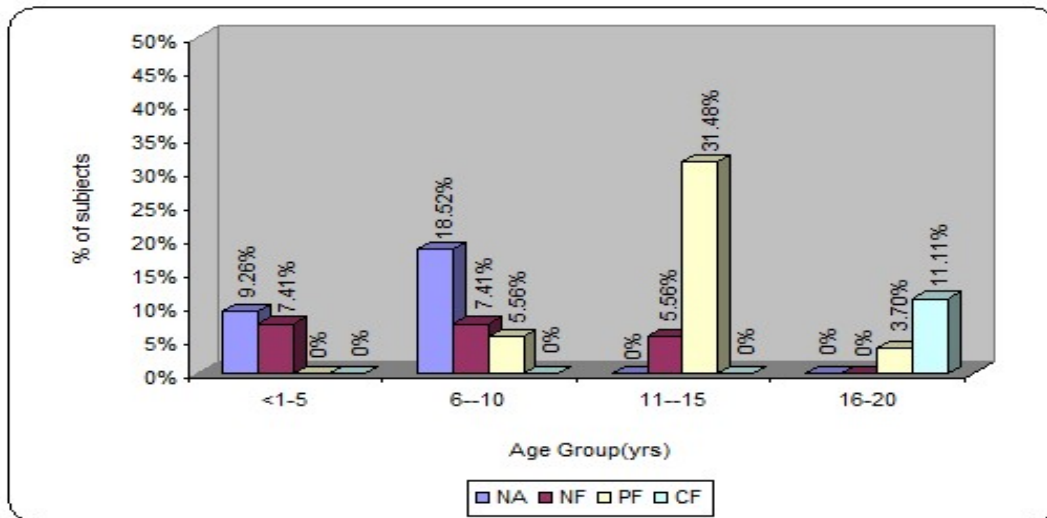


2) Table showing ossification of Distal end of Ulna in Males on left side.

Age in yr	NA	NF	PF	CF	Total
<1-5	5(9.26%)	4(7.41%)	0(0%)	0(0%)	9(16.67%)
6-10	10(18.52%)	4(7.41%)	3(5.56%)	0(0%)	17(31.48%)
11-15	0(0%)	3(5.56%)	17(31.48%)	0(0%)	20(37.04%)
16-20	0(0%)	0(0%)	2(3.70%)	6(11.11%)	8(14.81%)
Total	15(27.78%)	11(20.37%)	22(40.74%)	6(11.11%)	54(100%)
2x-value: 71.23, p-value: P<0.0001,S					

Distal End of Ulna was appeared and non fused in 4(7.41%) subjects in <1-5 age group and completely fused in 6(11.11%) subjects in 16-20 age group.

Graph showing ossification of distal end of Ulna in Males on left side.

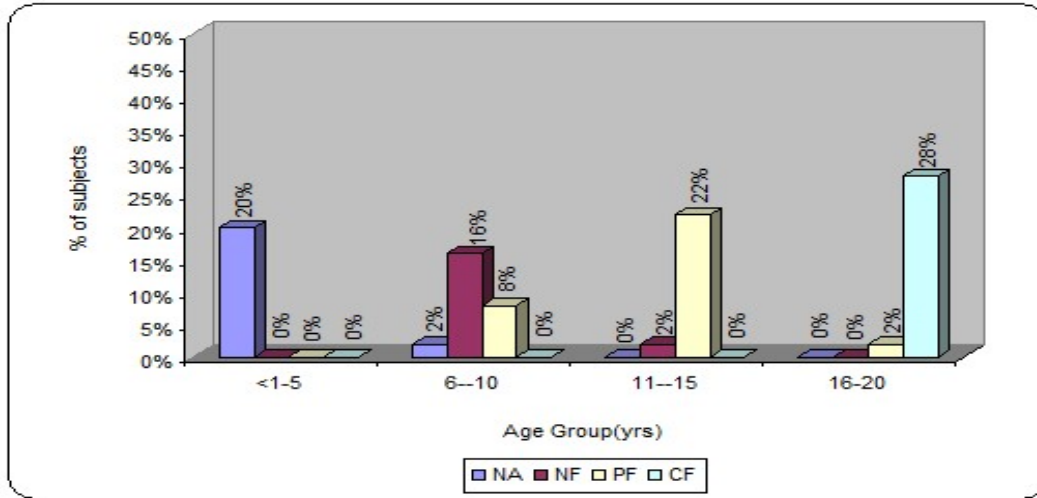


3) Table showing ossification of distal end of Ulna in Females on right side.

Age in yr	NA	NF	PF	CF	Total
<1-5	10(20%)	0(0%)	0(0%)	0(0%)	10(20%)
6-10	1(2%)	8(16%)	4(8%)	0(0%)	13(26%)
11-15	0(0%)	1(2%)	11(22%)	0(0%)	12(24%)
16-20	0(0%)	0(0%)	1(2%)	14(28%)	15(30%)
Total	11(22%)	9(18%)	16(32%)	14(28%)	50(100%)
2-value: 105.8, p-value: P<0.0001,S					

Distal End of Ulna was appeared and non fused in 8(16%) subjects in 6-10 age group and completely fused in 14(28%) subjects in 16-20 age group

Graph showing ossification of distal end of Ulna in females on right side.



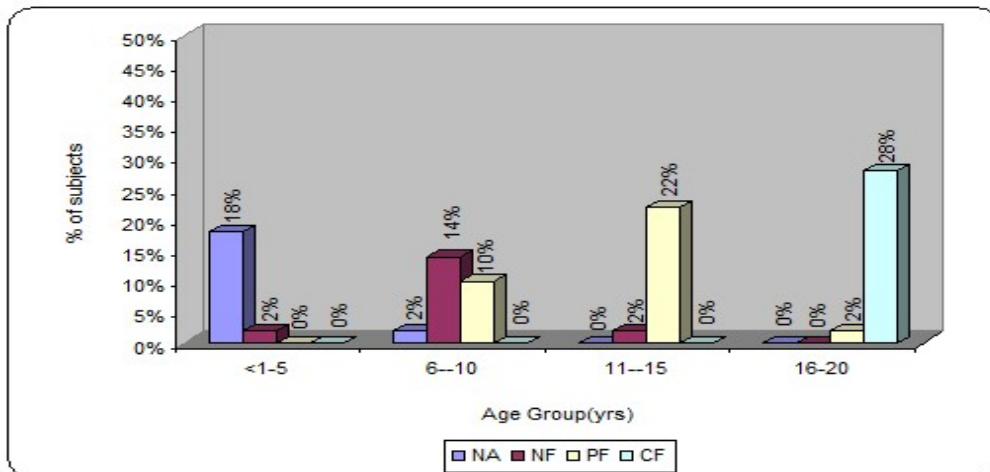
4) Table showing ossification of distal end of Ulna in females on left side.

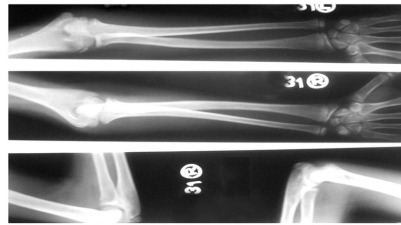
Age in yr	NA	NF	PF	CF	Total
<1-5	9(18%)	1(2%)	0(0%)	0(0%)	10(20%)
6-10	1(2%)	7(14%)	5(10%)	0(0%)	13(26%)
11-15	0(0%)	1(2%)	11(22%)	0(0%)	12(24%)
16-20	0(0%)	0(0%)	1(2%)	14(28%)	15(30%)
Total	10(20%)	9(18%)	17(34%)	14(28%)	50(100%)

2x-value: 95.02, p-value: P<0.0001,S

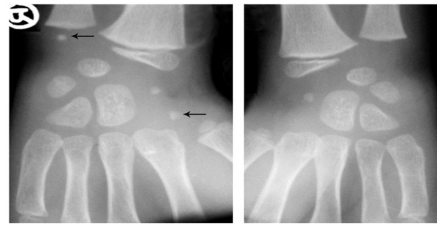
Distal End of Ulna was appeared and non fused in 1(2%) subjects in <1-5 age group and completely fused in 14(28%) subjects in 16-20 age group.

Graph showing ossification of distal end of Ulna in females on left side.

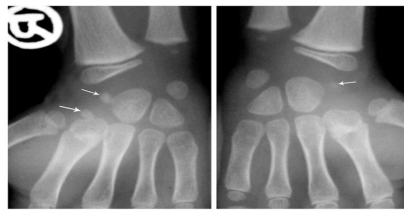




Six views of a subject taken only in 3 X-ray, shots to minimise radiation exposure. 4 AP views of wrist & Elbow taken in 1 shots. 2 lateral views of elbow taken in next 2 shots.



Lower end of Ulna appeared on right side only. Trapezium appeared only on right side in a 5 Year female subject.



Trapezium appeared only on right side, Scaphoid appeared more prominently on right side in a 4 Year male subject.



Composite epiphysis more fused on right side in a 13 Year male subject.



Composite epiphysis (Lateral epicondyle, capitulum and lateral flange of Trochlea, Medial flange of Trochlea) completely fused in a 12 Year female subject.

Discussion:

Distal end of Ulna in Males

Out of 104 subjects 54 male and 50 female subjects from age 0 to 20 years, were observed for ossification of distal end of Ulna process radiologically in this study. In the male age group of <1-5 years of age centre had not appeared in 6(11.11%) subjects and appeared, non fused in 3(5.56%) subjects on right side while not appeared in 5(9.26%) subjects and appeared, non fused 4(7.41%) on left side of the Wrist joint. It showed the difference of maturity of ossification in the same individuals over right and left sides. In the male age group of 6-10 years of age distal end of Ulna was not appeared in 9(16.67%) subjects and appeared, non fused in 5(9.26%) subjects and appeared, partially fused in 3(5.56%) subjects on right and distal end of Ulna was not appeared in 10(18.52%) subjects and appeared, non fused in 4(7.41%) subjects and appeared, partially fused in 3(5.56%) subjects on left sides of the Wrist joint. In this age group also significant bilateral variation in maturity of ossification is appreciated. In the male age group of 11-15 years of age distal end of Ulna was appeared, non fused in 3(5.56%) subjects and appeared, partially fused in 17(31.48%) subjects on both right and left sides. In this age group no bilateral variation in maturity of ossification is appreciated. In the male age group of 16-20 years of age group distal end of Ulna was appeared, partially fused in 3(5.56%) subjects and appeared,

completely fused in 5(9.26%) subjects on right side and distal end of Ulna was appeared, partially fused in 2(3.70%) subjects and appeared, completely fused in 6(11.11%) subjects on left side. In this age group significant bilateral variation in maturity of ossification is appreciated.

Distal end of Ulna in Females

In the female age group of <1-5 years of age ossification centre for distal end of Ulna was not appeared in 10(20%) subjects on right side while not appeared in 9(18%) subjects and it was appeared, non fused in 1(2%) subjects on left side. Thus, it shows the difference of appearance ossification centre for lower end of Ulna on right and left side in the same single Individual. In the female age group of 6-10 years of age distal end of Ulna was not appeared in 1(2%) subjects and was appeared, non fused in 8(16%) subjects, while it was appeared, partially fused in 4(8%) subjects on right sides. In the same age group distal end of Ulna was not appeared in 1(2%) subjects and was appeared, non fused in 7(14%) subjects, while it was appeared, partially fused in 5(10%) subjects on left side. Again in this age group, the bilateral difference of ossification is appreciated in an individual. In the female age group of 11-15 years of age distal end of Ulna was appeared, non fused in 1(2%) subjects, while was appeared, partially fused in 11(22%) subjects on right and left sides. In this age group no bilateral difference is appreciated. In the female age group of 16-20 years of age group distal end of Ulna was appeared, partially fused in 1(2%) subjects and was appeared completely fused in 14(28%) subjects on both right and left sides. In this age group no bilateral difference is appreciated.

In this study distal end of Ulna was appeared and completely fused earliest at 17 years in male subject and at 16 years in female subjects on both right and left sides.

Hence it can be concluded that in this study in female subjects centre for distal end of Ulna appeared at 6-8 year and fused at 16-17 year on both right and left sides. In male subjects centre for distal end of Ulna appeared at 4-7 year and fused at 17-18 year on both right and left sides.

Most of the studies don't revealed any bilateral difference of ossification unlike this study. This study revealed difference in appearance and fusion of ossification on right and left side in Individuals.

Galstaun G. (1937%) in Bengali population found appearance of the centre for distal end of Ulna appeared at 8-10 year and fusion at 17 years in females. In males he found appearance of the centre at 10-11 year and fusion at 18 year⁹. This observation is not in accordance with the findings in the present study. In present study in females the centre for distal end of Ulna appeared at 2 years earlier on both right and left sides. Centre for Distal end of Ulna fused with the shaft of the Ulna at 0- 1 year earlier on both right and left sides. In case of males the centre for distal end of Ulna appeared at 4 – 6 year earlier on both right and left sides. Centre for distal end of Ulna fused with the shaft of the Ulna 0 - 1 year earlier on both right and left sides.

Basu and Basu (1938) found in his study conducted on Bengalis Hindu Females that the distal end of Ulna unites with the shaft of the Ulna at the age of 16-17 year¹⁰. The findings of present study are also persistent with this study in females.

Davies & Person (1927) in his study on Englanders found that the distal end of Ulna appears at 7-8 year and unites with the shaft of the Ulna at the age of 20 years both in male and females. In the present study, the centre for distal end of Ulna appeared at 0 - 1 year earlier in females. In females the centre for distal end of Ulna fused with the shaft of the Ulna at 3 – 4 year earlier. In case of males the centre for distal end of Ulna appeared at 1 – 3 year earlier in upper limit of age group. In males the centre for distal end of Ulna fused with the shaft of the Ulna at 2 – 3 year earlier on both right and left sides.

Flecker (1942) in Australian population found that the distal end of Ulna unites with the shaft of the Ulna at the age of 17 years in female. In males the distal end of Ulna appears at 6 years and unites with the shaft of the Ulna at the age of 19 year¹¹. In comparison with this study in present study I females the age at which distal end of Ulna unites with the shaft of the Ulna at the age of 0 - 1 year earlier on both right and left sides. In males the age at which distal end of Ulna appears is 2 year earlier and 1 year later in some cases on both right and left sides. In males the centre for distal end of Ulna fused with the shaft of the humerus at 1 - 2 year earlier on both right and left sides.

Summary and Conclusions:

- This study was conducted exclusively on the young population of Central India keeping in mind that very less literature about the age estimation from ossification of lower end of Ulna right and left side is available involving this particular region of India.
- It can be concluded that in this study in female subjects centre for distal end of Ulna appeared at 6-8 year and fused at 16-17 year on both right and left sides. In male subjects centre for distal end of Ulna appeared at 4-7 year and fused at 17-18 year on both right and left sides.
- Bilateral variation in appearance and fusion of ossification is mentioned in the places in the available literature. Bilateral Difference of appearance and fusion of ossification centers is prominently observed in this study. It is difficult to calculate such difference of ossification in terms of days and months due to non-availability of such research depicting the bilateral ossification variation.
- Difference of size of appearance ossification centre and variation in degree fusion of epiphyses is also observed in the present study
- The process of ossification was completed remarkably faster in females than males which correspond with the available literature. In one male individual exceptionally centers of ossification appeared earlier than females of same age. This new trend can be validated and explored if more such studies involving the dietary, environmental, economical, religious, physical work etc. factors are considered and performed in this region.
- By comparing the findings in this study and the available literature it is found that the age of appearance and fusion of ossification centres in the females of this region is nearly similar to the Bengali females.
- By comparing the available literature, the age of skeletal maturity in both males and females in this region is nearly similar to those in state of Punjab.
- By comparing the available literature ossification center appear and fuse one to two years earlier in this study with population of Central India than those in Australia and England.
- As this study is done in Central India region the application of standards of this study can be considered ideal for application in the region of Central India.
- Population in Central India is mixed type comprising of various religions and castes, so this study is not applicable to specific caste or religion for estimation of age.
- As the sample size is limited further studies are necessary. Region wise studies should be conducted for better correlation and comparison.
- 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.

- It can be proposed that for better age estimation in judicial cases, Bilateral radiological examination should be advised rather than Unilateral.
- Due to very narrow borderline range of differentiation between various stages of fusion, it is difficult to consider stage of fusion as age indicator.
- For radiological study proper exposure of X-ray, proper positioning while X-ray shooting and proper development of X-ray films is necessary.
- Radiological interpretations are observer dependent so the set standards should be considered under expert guidance to arrive at conclusion in such radiological studies.

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Original research paper

CHANGE IN SOCIAL PSYCHE, A TRIGGER TO COMMIT CRIME: A STUDY CONDUCTED ON PRISONERS OF SOUTHERN COASTAL INDIA.

Dr. G. Vijayakumar Nair, Dr. Prasanand Sasidharan, Dr. Bhanu Prakash Kolasani

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Original research paper

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Dr. G. Vijayakumar Nair, Dr. Prasanand Sasidharan, Dr. Bhanu Prakash Kolasani

Abstract

The highest probability of crime related cases and emergence of new vulnerabilities in southern coastal regions of India was the reason for undergoing this study in major prisons of multi hazardous region. A cross-sectional study was conducted on 70 prisoners with 22-35 years of age in three major prisons of southern coastal India in 2014. Interview method was designed and all collected data like age group, sex, educational standards, economic status, prisoner's relationship to victims, type of crime and triggering factors for committing crime were analyzed. All 70 prisoners were male and the crime committed by all was murder. Majority of prisoners (54.29%), related to the victims (65.63%) and non-related to victims (42.11%) were from Cuddalore prison. Among the overall prisoners, 44.28% completed their primary schooling and major factor to commit crime was due to their poor economic condition (37%). Low family income, unemployment and poverty are the major risk factors to commit crime. Parents must teach their children, positive social skills and to manage their problems effectively. More recreation programs should be implemented. Increasing more installation of surveillance CCTVs must be established. Physicians may initiate the use of anti-depressants. Effective laws and policies should be amended that can change the mindset of the society at large.

Keywords: Social psych, Criminology, Pseudo status

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Keywords: Social psych, Criminology, Pseudo status

Introduction:

Crime is an intentional act in violation of the criminal law committed without defense or excuse and penalized by the state. The present study reveals the significant variation in psyche in the society which is endangering the tradition, custom and a neglecting attitude towards law of the land. Deeply entrenched thoughts with respect to the modern day gadgets, brands, lifestyles, pseudo status, etc., triggering the incidence of increased crime. Every crime differs from country to country, region to region, state to state, society to society and also time to time depending on the various situations. So, it is too difficult to mention crime as a universally acceptable definition. According to K.C. Dubey, crime is a deviant behavior that violates prevailing norms cultural standards prescribing how humans ought to behave normally [1]. Our study brings out the complex realities in and around the world of crime and make us understand how changing political, social, economic conditions, educational standards and most predominant, the psychological illness had influence over the present day crimes and the amendments on the legal, law, policies, enforcement and penal codes designed by the society support the deflation of crimes. Crime control is a reconfigured complex of interlocking structures and strategies that are themselves composed of old and new elements, the old revised and reoriented by a new operation context [2].

The accepted social normal life of the people had been interrupted, which stands out as a universal phenomenon behind the terminology crime. Crime is an action that is against one of the public sanctions of any society. A criminal is a person who commits an action that is against

formal regulations of a country. However, the extent, kind, purpose, motive and intensity of the crime differ from place to place. Being a relative phenomenon, depending on the time, places and occurrence of the crime, it varies widely from society to society. Crimes, theft, violence, addiction, prostitution, robbery and drug dealing are the reasons in causing social deviances [3]. Crime issues are politicized and regularly represented as an emotive aversion which is a cardinal sin in the sense of arguments against the use of human [4].

Research had shown that adolescents whose peers disapproved of delinquent behavior were less likely to report having committed delinquent acts, including sexual assaults [5]. The present work focused on the violent behavior of youngsters for the course of gaining independence from parents and developing a pseudo identity within the peer group. Study indicates that young people were more prone to commit violent behavior because of verbal coercion from friends due to their own personal desire to gain acceptance within their peer group. The career approach explores how criminal behavior progresses, not necessarily in a linear manner, from tentative flirtations with rule breaking, to more sustained involvement in crime and finally to a criminal role and identity [6].

The different criminal activities among the youth had become the most important economic and apolitical issues in the coming decades of southern India, especially when there is a negative impact to the economic growth and displaced lives and livelihoods of the public. The intention of committing crimes had led to decline in security and social capital which were the two main prerequisites for the development and progress of any society and lacking them may end up in recession and increased crime.

The transitional period from childhood to adolescence and adolescence to maturity, youth were generally imposed to face different socio-economic crises. Recent work on relationship between youth violence and crime had proved that teenage groups had major role in committing crime and its outcomes could be analyzed as an adaptive strategy which may provide healthy environments in the society. In this present study, an attempt had been made to study the different risk factors responsible for criminal behaviors of the prisoners and also the youth.

The social action at specific period of time and in a particular society can be regarded as a social deviance, it may be considered normal in a different cultural context or in the same society but within a different time span [3, 7]. The spread of social deviances in general and committing crimes in particular, impose the exorbitant costs on societies that reduces the social security and also by eroding the human resources of society's acts as a main obstacle in the way of development. That is because these social damages deprive individuals and societies from many socio-economic opportunities that form societies.

In this present study, it attempts to offer a sociological analysis of crime in Pondicherry state & Cuddalore prisons from 2010 to 2014. Prisons have long been associated with punishment, deprivation and poor conditions, but it is only recently that prisons have been linked to the treatment and human rights violations of mentally disordered prisoners [8]. Using data analysis method, the findings of the study demonstrate that the highest rate of crime is related to financial reasons and the lowest rate to cultural and political crimes. Our study also reveals the relation between age, lower educational status and the kind of crime. The crimes committed in south coastal regions were more violent, financial and juvenile, indicating the threat of organized and

cooperative crimes among the younger age groups. Since the rate of committing crimes in the target area of our study was dramatically increasing, leading to social damages, the major objective of the present article was to study the social factors that influence in committing crimes like poor economic conditions, peer group pressure, family situations, neighborhood, alcohol addiction and educational status.

Objectives:

The main objectives of the study are given below:

- A. To analyze the criminality in terms of the theoretical background of criminology to find out the different motivational factors for their involvement in crime.
- B. To study the influence of modern lifestyle being the initiation for committing crime among the middle aged and young population in the modern society.

Materials & Method:

The present study was concerned for examining the nature of criminality in both rural and urban background criminals lodged in three prisons of Southern-India namely Pondicherry, Karaikal & Cuddalore prisons. The study was conducted in 2014 and all the prison inmates are under the period of imprisonment from 2010 to 2014. Totally seventy (70) respondents had taken part in this study and the majority were under the age group of 22- 35 years. All prisoners willing to participate were included in the study and non-willing prisoners were excluded from the study. An interview method had been used to collect data from the responders from all the three prisons. All collected data and gathered information were presented and generalized in a tabular format and charts. Besides, respondent's age group, sex, educational standards, economic status and the type of crime, the triggering factors for committing crime were also analyzed.

Results:

This descriptive cross sectional study was conducted on seventy prisoners in three major prisons of southern coastal India in 2014. The study revealed that all the convicted prisoners were male and no females had been jailed in these prisons for committing crime. The crime committed by all the male prisoners was murder and it was executed only for the sake of gain towards modern lifestyle. Every convict in all the prisons had accepted their crime committed and were found guilty of their murder. Those murders committed were not intentional and was accidental or incidentally homicidal during their faulty activity. Causal attributions vary along several dimensions. They may be: internal or external, intentional or unintentional, stable or unstable and controllable or uncontrollable [9].

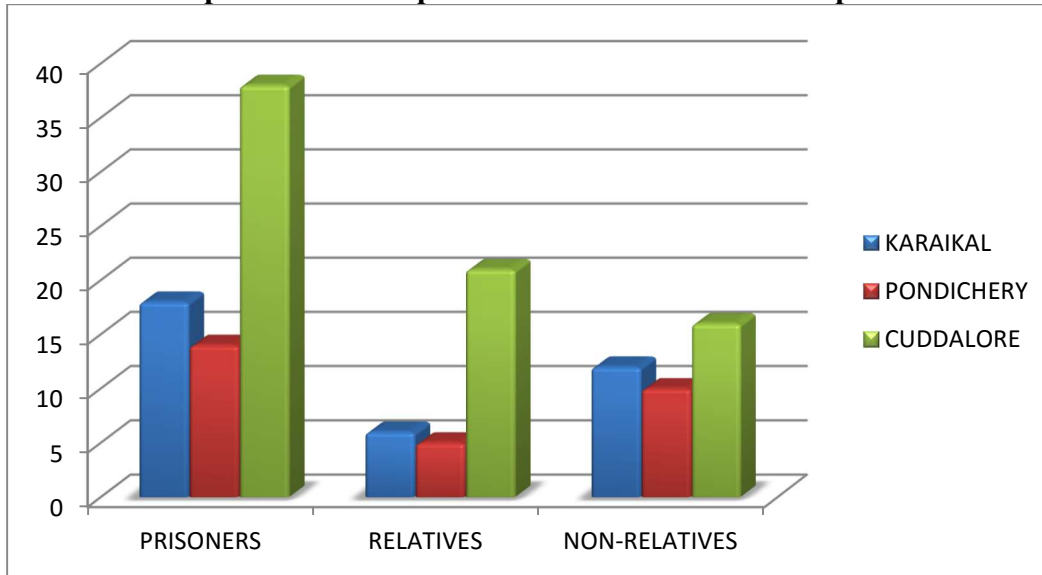
Prisons	Number of prisoners	(%)
Karaikal	18	25.71
Pondicherry	14	20
Cuddalore	38	54.29
Total	70	100

Prisons	Relatives		Non-relatives	
	No.	%	No.	%
Karaikal	06	18.75	12	31.58
Pondicherry	05	15.62	10	26.32
Cuddalore	21	65.63	16	42.11
Total	32	45.71	38	54.29

Table 1: Number of prisoners in various prisons:

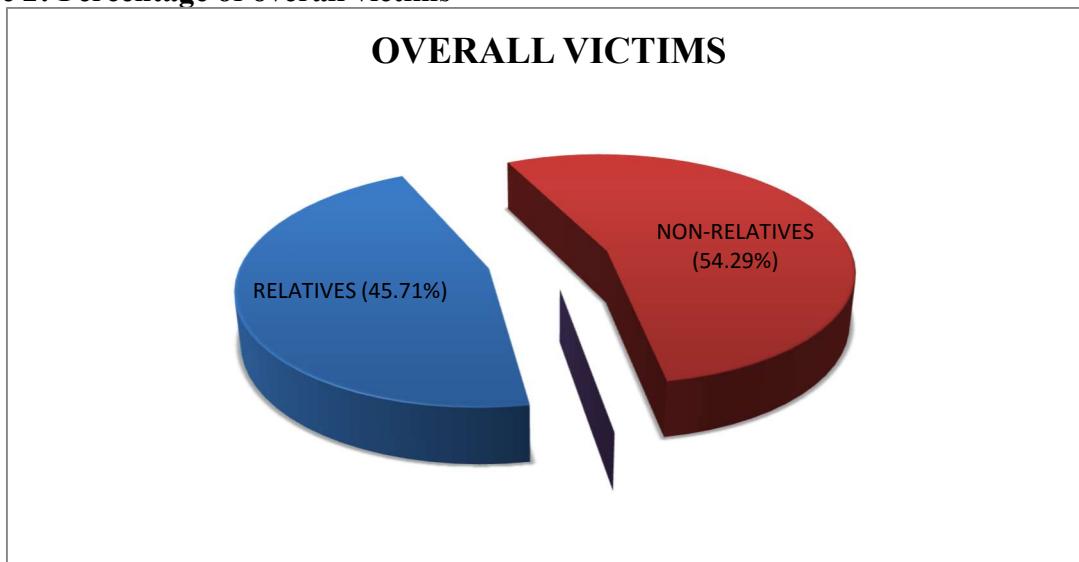
Table 2: Prisoner's and victim's relationship:

Figure 1 : Number of prisoners in all prisons and victims relationship



In our study, the Cuddalore prison had the maximum with 38 prisoners (54.29%) when compared to Karaikal and Pondicherry prisons with 18 and 14 prisoners (25.71% and 20%) respectively. These murders involved the relatives and the non-relatives of the convicts. Majority of murder was committed on non-relatives with 38 victims (54.29%) than the relatives with 32 victims (45.71%) (Tab. 1, fig. 1). Among all the prisons, Cuddalore prison had more number of convicts related to the victim (21) and non-relatives (16) as victim when compared to Karaikal with less relatives as victim (06) and non-relatives (12) followed by Pondicherry prison with least number of relatives (05) and non-relatives (10) murdered. The number of victims related to the prisoners in Karaikal and Pondicherry prisons were almost equal percentage and had a gross difference from the Cuddalore prison. This impact on the crime numbers stress on the crime rate occurring in different parts of the city jails (Tab. 2, fig. 2)

Figure 2: Percentage of overall victims

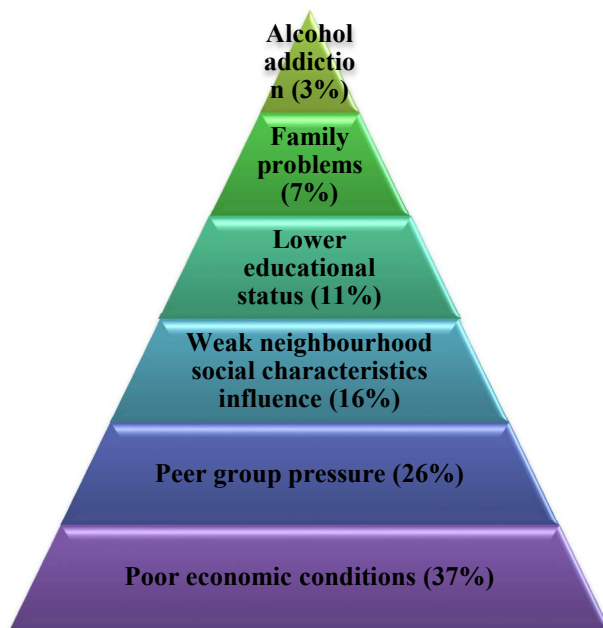


The majority of prisoners had completed their primary schooling (n=31; 44.28%), followed by illiterates (n=18; 24.71%) and higher secondary pass (n=15; 21.42%). None of the prisoners had

Table 3: Prisoner’s educational status

EDUCATION	NUMBER OF PRISONERS	PERCENTAGE (%)
Illiterate	18	25.71
Primary schooling	31	44.28
Higher secondary pass	15	21.42
Graduate	02	2.86
Post graduate	00	00
Unknown	04	5.71
Total	70	100

Figure 3: Factors influencing crime rate



Poverty had been found as an attribute to greater likelihood of involvement in crime and violence [13]. Self-reported felony assault and robbery have been found to be twice as common among youth living in poverty as among middle class youth [4]. Low family income predicted self-reported teen violence and convictions for violent offenses in several studies. Our study put forth, the poor economic conditions and the peer group pressure had been found responsible among the major factors that creates an impact for the youth and influencing them to commit crime, while alcohol addictions and family problems were the least influencing factors in committing crime.

Most offenders, excluding perhaps psychopaths are not immune to the moral constraints on behavior that influence all socialized beings [14]. The cause of such behavior may be the factors that are external, uncontrollable and unintentional [15]. Uses of anti-depressants can be helpful for the younger age groups in preventing them to commit crime. According to Yasmin amolero et al, although selective serotonin reuptake inhibitors (SSRIs) & venlafaxine (serotonin–norepinephrine reuptake inhibitor), were widely prescribed, associations with violence was uncertain [16]. According to a Swedish Professor, more research is needed to confirm their

done their post-graduation studies (tab. 3). The poor economic condition (37%) of the prisoners was the major risk factor influencing the crime, followed by peer group pressure (26%) and influence of weak neighborhood social characteristics (16%). The least risk factor that was responsible for the crime was alcohol addiction (3%) (Fig. 3).

Discussion & suggestions:

As, it had been hopefully made clear that this article reveals the present day psyche of the individuals indulged in crime as an outcome of craving towards pseudo status lifestyle. To the best of our knowledge, in the past there were no studies done in south coastal India relating the prisoners and their mental psyche.

All the prisoners were male and these findings were consistent with the literature of Professor Frances Heidensohn, who described the gender crime gap as a robust and long-established finding [10]. The crime committed by all the prisoners was murder. Majority of victims were related to the prisoners; they were consistent with other study indicating that immediate relatives are most likely to be lost in murder [11].

The major risk factor influencing crime was poor economic condition which was consistent with another literature [12].

association. If it is proven, any decision to stop prescribing the drugs to young people would be weighed up against their good indication.

There is one potential solution to many of the problems set above is the installation of more private security services with increased numbers of surveillance CCTVs technologies on city streets which can reduce the severity of crime.

Parents must likely to teach positive social skills to their children, to deal with their problems and to improve their attitude effectively. High-quality mentoring programs, which are often beneficial must be implemented for target thinking, encourage learning, foster motivation, self-confidence and to bring about rehabilitation to the criminals. The importance of rural-urban conceptual framework is necessary that brings together the civil society, private, commercial, district and state sectors. The laws should be amended in such a manner that can change the mindset of the society at large.

Moreover, the significant difference between the various levels of education and committing crimes designates the social control theory that states the individual's commitment can reduce the crimes. Young people from remote backgrounds were often deterred from both entering full-time education and continuing their higher education and reach their full academic potential, which was not achieved because of the economic hardships they conquer, especially debt. More financial help, especially non-repayable bursaries from the government, would aid such people, particularly those enrolled in longer, more prestigious courses. To overcome their financial problems, various sources of income - particularly paid work and debt - must be budgeted against hardship and study time. Interestingly, it was often the fear of debt, rather than actual amount of debt which led to reduced education.

Conclusion:

Low family income, unemployment and poverty are the major risk factors to commit crime and to overcome this, more self-employment among youths and more financial help, especially non-repayable bursaries from government may help them. Parents must teach their children, positive social skills and to manage their problems effectively. More recreation programs should be implemented to target and to change the attitude of youth towards crime. The conceptual rural-urban framework is necessary. Increasing more installation of surveillance CCTVs must be established. If required, physicians may initiate the use of anti-depressants after thorough investigations. Effective laws and policies should be amended in such a manner that can change the mindset of the society at large.

Acknowledgment:

We acknowledge and extend hearty thanks to the prison authorities of Pondicherry, Karaikal and Cuddalore prisons for permitting us to visit and conduct interviews with the criminals and also for rendering all kind of help in this study. We owe our gratitude to the Dean and the medical superintendent of our Institution.

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Original research article

STUDY OF PRE-SCHOOL CHILDREN DEATHS: AN AUTOPSY STUDY

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Original research article

STUDY OF PRE-SCHOOL CHILDREN DEATHS: AN AUTOPSY STUDY

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Abstract:

Deaths in infants and pre-school children have always been concern for the society. With the objective to analyse profile of deaths in pre-school children, present study was conducted at tertiary centre from January 2014 to December 2014. 69 cases were studied from age group of 0 to 5 years. 47 cases (68.11 %) accounted for accidental deaths, followed by 11 cases (15.9 %) of natural deaths. Amongst accidental deaths, head injury was most common cause of death, followed by deaths due to natural causes and thermal injuries. Smothering was most common mode of killing. Results from this study may aid in determining where and how to direct efforts in curbing unnatural deaths in children.

Key Words: pre-school children deaths, homicide, head injury, autopsy

Introduction:

Deaths in children have always been concern for the society as this particular section of the society is very much needed for the building the nation in future. These deaths are scrutinised by various concerned authorities, most of them are to evaluate mortality due to natural causes.(1) However, deaths in this age group attributed by violence are on rise. Changing socio- epidemiological scenario of deaths in pre-school children was the impetus for the present study.

Government Medical College, Aurangabad is a tertiary health care centre and cater autopsy services to population of 3,701,282.(2) As per the law of land, any unwitnessed or unnatural death is subjected to medicolegal autopsy. Most of deaths of children are felt to be associated with modifiable behaviour, either on the part of parents or the children, more than with any other age groups. In analyzing pre-school children's unnatural deaths retrospectively, we may achieve a better understanding of factors responsible for these deaths.

Material and methods:

This study was conducted at the Government Medical College, Aurangabad during January 2014 to December 2014. The data collected were extracted from the case files. The confidentiality of the decedents was protected through the readily identifiable information. Sudden and untimely, suspicious or unnatural deaths of children below 5 years were subjected to medicolegal autopsy. Demographic and circumstantial information was obtained after analysis of autopsy findings, review of police files, and interview with relatives of decedents, and, were tabulated for natural deaths, homicides, and accidental deaths.

Results:

Total 69 cases were examined during the study, of which 37 were male and 32 were female (M:F, 1.15:1). Maximum cases were in age group of 1 to 3 years (36 %), followed by in age group of 3 to 5 years (30 %). 47 cases (68.11 %) accounted for accidental deaths, followed by 11 cases (15.9 %) of natural deaths. Homicidal deaths accounted for 7 cases (10 %). **(Table 1)** Monthly distribution of cases shows maximum incidence (n = 30, 43.4%) in summer season i.e from March to June. Amongst accidental deaths, head injury was most common cause of death.**(Figure 1)** Smothering was most common (n=4, 57%) cause of intentional killing. **(Figure 2)**

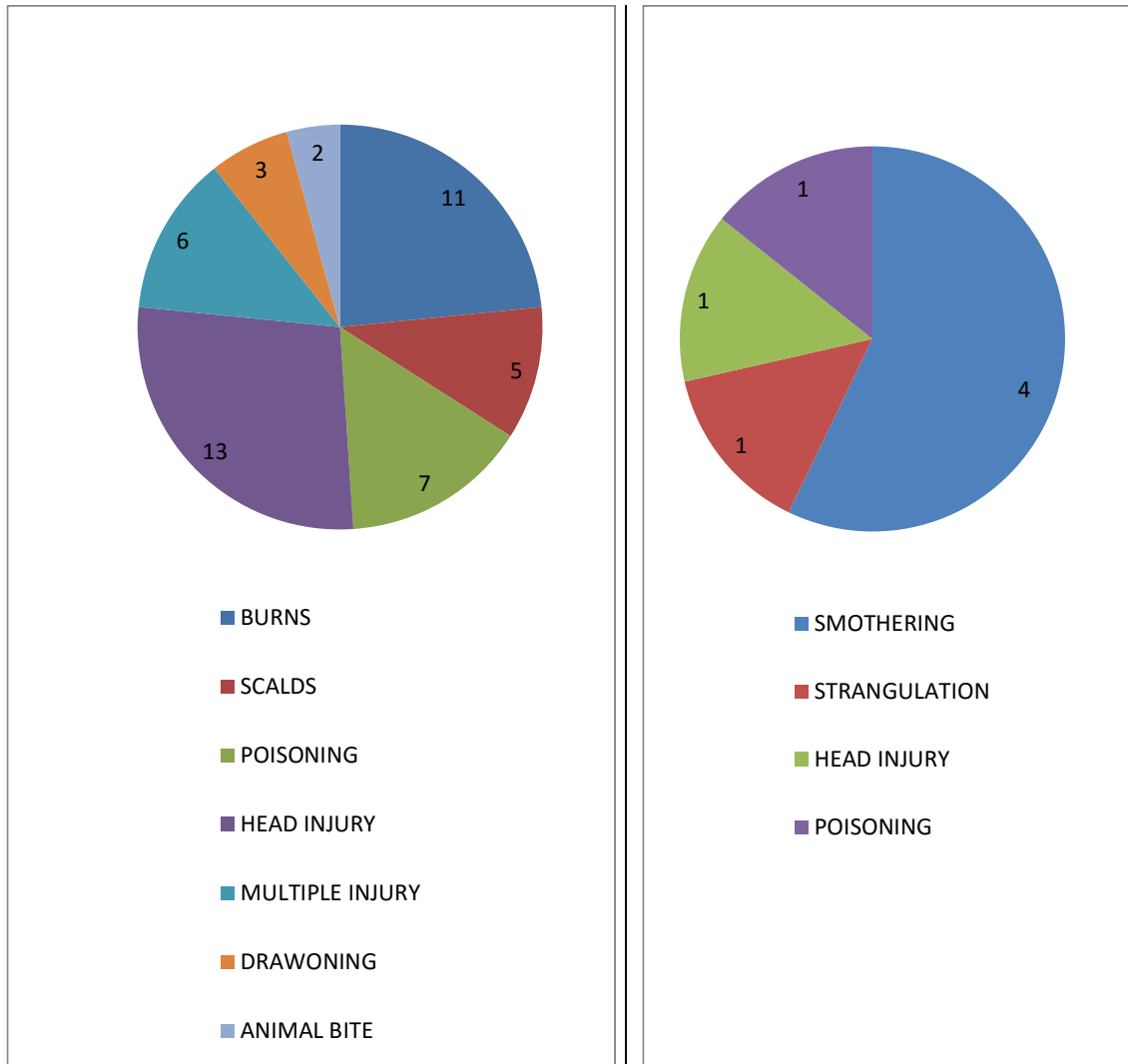


Figure 1: Cause of accidental deaths in pre-school children

Figure 2: Cause of homicidal deaths in pre-school children

Table 1: Distribution of autopsy cases of pre-school children

	Age					Sex	
	Upto 1 week	Upto 3 months	Under 1 year	1-3year	3-5year	Male	Female
No	9	6	8	25	21	37	32
%	13.04	8.69	11.59	36.23	30.43	53.62	46.37
	Months			Manner of death			
	Summer (March-June)	Rainy (July-Oct)	Winter (Nov-Feb)	Accidental	Homicide	Natural	Undetermined
No	30	19	24	47	7	11	4
%	43.4	27.5	34.7	68.11	10.14	15.94	5.79

Discussion:

Unlawful killings of children has always evoked emotion and attracted extensive media coverage, yet the subject has received little systematic study.(3) Results of the present study are comparable with other studies.

Age and sex: Male: Female ratio in present study is 1.15:1. Study at Manipal(4) and Aurangabad(1) having Indian demographic profile also shows similar sex ratio.

Manner of death: Manner of death in unnatural deaths was inferred based upon evaluation of history, circumstantial evidences and post-mortem findings. Accidental deaths or unintentional death was most manner of death (n = 47, 68.11 %), followed by deaths occurring due to natural causes (n = 11, 15.9 %). Other studies also reported accidental deaths in range of 36 %(4) to 44 %(5). A number of other studies provide data for comparison and discussion.

Homicidal deaths represented only 10.14 % of paediatric deaths in present study. Lee and Lathrop(6) also observed 6.5% of childhood deaths due to homicides. Most commonly homicides have occurred within 1 week of birth (n=3, 42.9%), 2 cases have occurred each in age group of 3 months to 1 year and from 1 year to 3 years. Infants were 4 times as likely to be victims of homicide as 1- to 4-year-old.(7) In another study, homicide cases were nearly equally divided between infancy and early childhood cases.(8) Collectively, all homicidal deaths have occurred in age group of 0-3 years of age. Obvious reasons for this may be lack of resistance at this tender age. First year after birth was found to be most crucial in study by Fajardo and Hanzlick,(9) and, Vali M(10).

Cause of death: Deaths were mainly divided into natural and unnatural deaths. Head Injury predominated as cause of death in present study, followed by deaths due to natural causes and thermal injuries. Drowning was observed to be most common cause of death in non traffic-related accidental deaths in a study by Fajardo and Hanzlick(9). Assessing natural deaths and their etiologies is itself having vast scope, and was not aimed in this study. Cause of death in some of cases (n=4, 5.8 %) were undetermined. The reason for that is the lack of information accompanying the case referred to by the medico-legal autopsy. The rationale for classifying these deaths as of undetermined manner of death was that death from a disease had been excluded at the autopsy and/or the evidence from police suggested that the death was unnatural. Such was also observation of Vali M(10), and further opined that often the forensic pathologist does not attend the examination of the scene of death, and his/her conclusions about the intent of death are based only on the autopsy findings.

Smothering was most common mode (57%) of killing observed in present study. While, head injury was observed as common mode in homicides by Arnestad M et al(11) and Molina DK et al(12).

In present study, maximum cases (n = 30, 43.4%) were observed in summer season i.e. from March to June. Similar was observation in a study by Zine KU et al.(1) More frequency of these deaths may be due to lack of schooling in this season, and thus more exposure of children to unfamiliar miscellaneous environment.

Conclusion:

Accidental deaths form major bulk of cases, indicating implementation of measures to curb these potentially preventable accidental deaths. This study reconfirms that tender age is highly susceptible to homicides. Moreover, high proportion of deaths sudden natural deaths and undetermined deaths suggests need for more information on circumstances around death to enable establishing the manner of death. Further, results from this study may aid in determining where and how to direct efforts in curbing unnatural deaths in children.

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Case Report

MIDDLE-EAR HAEMORRHAGE CONFIRMS THE CAUSE OF DEATH IN DECOMPOSED BODY FOUND IN THE SEA AFTER THE HELICOPTER CRASH TRAGEDY: CASE REPORT

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Case Report

MIDDLE-EAR HAEMORRHAGE CONFIRMS THE CAUSE OF DEATH IN DECOMPOSED BODY FOUND IN THE SEA AFTER THE HELICOPTER CRASH TRAGEDY: CASE REPORT

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Abstract:

Drowning is a form of asphyxia due to aspiration of fluid into air passages, caused by submersion in water or other fluid. Drowning is one of the most difficult modes of death to prove at post-mortem, especially when the body is not examined in a fresh condition. The diagnosis is basically one of exclusion based largely on the history and investigative reports of the case. If such dead bodies recovered from sea gets decomposed and brought for autopsy then it makes the task difficult for autopsy surgeon to ascertain the cause of death. This paper describes that on meticulous examination, the autopsy doctor could be able to reach to a conclusion by ruling out other possible causes of death and find out less encountered findings like middle ear haemorrhages along with positive diatoms test.

Key words: salt water drowning, decomposed body, middle ear haemorrhage, diatoms.

Introduction:

Drowning is a mode of violent asphyxia death. About 150,000 people die from drowning each year around the world. [1] Drowning is mostly accidental in nature and commonly succumbed peoples are no swimmers i.e. in children or incapacitated persons by any means. Second most nature of drowning is suicidal one. Homicidal drowning is very rare and seen in infants and children. In typical wet drowning all possible signs of drowning will be found at autopsy but in atypical drowning reliable signs of drowning will not be seen. In advanced putrefaction the diagnosis is difficult because signs are completely absent. In our set up most common cases of violent asphyxial death are hanging followed by drowning.

Case Report:

A dead body of 58 years old male brought to morgue of forensic medicine department of sir JJ hospital for post-mortem examination. As per accidental death report and police inquest reports, the deceased was missing since eight days after helicopter crash in Arabian Sea. Deceased was pilot by occupation and had an experience of around 50000km of helicopter driving. On the day of incidence, the deceased and his co-pilot took off from ONGC platform for night training in the Arabian Sea, but after half an hour from their take off they were untraced and uncontacted. So navy authority thought they might have met with an accident of helicopter crash in the Arabian Sea. For that they started search operation in the Sea. However, they were unable to find them. It was only when one of the pilots was found dead and found near sea shore after eight days of incidence that they come to conclusion.

On **External** examination: A body was in advanced decomposition state with foul smell emanating from the body. Evidence of gas stiffening noted over whole body. Adipocere formation seen over chest, shoulder, back, abdomen, shoulder, upper and lower limbs. Bloating over face, abdomen and external genitalia. Eyes were swollen and protruded out of the eye sockets. Mouth was closed but on opening of it shown tongue clinched between anterior teeth. Separated and loosened black white colour hairs of moustaches and beard noted over face. Nose Bridge and nostrils flattened and deformed due to decomposition. Scalp hair black colour loosened and easily pluckable. No external injuries noted over face, neck and scalp. No froth noted at orifices of nose and mouth. Abdomen showed distension



1. Photograph shows decomposed body.

due to post-mortem gas formation. Marbling of veins noted over chest, upper and lower limbs. External genitalia showed swelling and bloating features. Peeling of epidermis seen at hands and feet. On palpation no any closed fractures were noted.

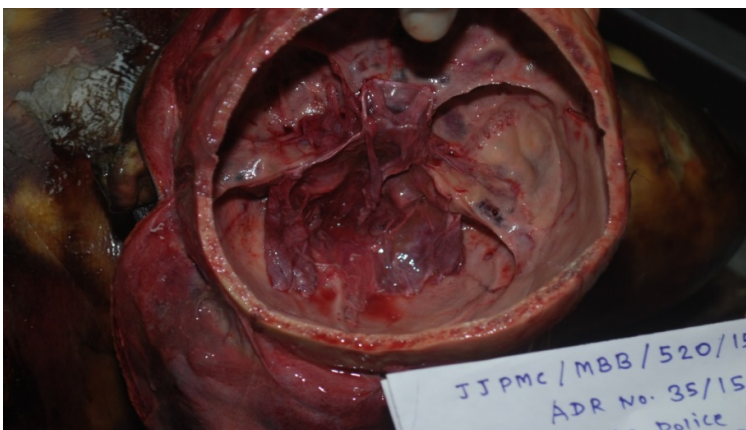
On Internal examination:

On internal examination all organs were found to be soft, flabby and partly autolysed. On opening of trachea no froth was noted but tracheal mucosa shows signs of decomposition. Both lungs autolysed and showed decomposition. Stomach content around 200cc partly digested food material, no specific smell perceived and mucosa was unremarkable. On opening of skull no under scalp injury was noted or no skull fracture. Brain matter was liquefied and meninges were intact. On stripping off the Dura at the base of skull, there was evidence of bilateral middle ear haemorrhage on right side. On dissection, haemorrhages noted with intact tympanic membrane. Visceral organs were preserved for chemical analysis, tissue bits for histopathological examination, tissue such as liver, lungs and bone marrow and water sample from the site where dead body found for diatom test and DNA samples were kept to rule out other possible causes of death.

Discussion:

It is said that drowning is a diagnosis of exclusion. If there are fresh reliable signs on post-mortem examination, then only one can ascertain the cause of death. So otherwise we have to exclude the typical features of drowning by noting them negative. Problem is even more when body is recovered from source after many days of drowning in advanced decomposition state. In that situation autopsy surgeon has big task to confirm the cause and mode of death, and whether it is ante mortem or post-mortem drowning. In many occasions such suspected drowned body can't be found out because of high tide and high water current of Sea. They get moved to distant places from actual site of incidence or such drowned body takes some hours to days to come on to the water surface after being sunk. In present case we did not get

2. Photograph shows middle ear haemorrhage



typical signs and features of drowning since body was in decomposed state. We did rule out head injury, probable myocardial infarction, alcohol consumption and co poisoning during autopsy and after receipt of chemical analysis and histopathological reports. Viscera were kept for alcohol, drugs, carbon monoxide poison but came negative. We arrived at our

conclusion that on opening of skull at its base we did find the middle ear haemorrhages which is one of the sign of drowning. Possible mechanism for production of it in drowning is due to barotrauma, i.e. the pressure differences between the middle ear and the surrounding water produce a relative vacuum and this negative pressure within the closed cavity leads to inward stretching of the tympanic membrane and haemorrhages. [2, 3, 4] Further we did also get the positive report for diatoms from our laboratory. We did meticulously ruled out the possible causes of middle ear haemorrhage such as head injury, CO poisoning, hanging, and myocardial infarction. On account of these two positive findings we gave the opinion as to cause of death was ante mortem drowning.

Conclusion:

To ascertain the diagnosis of violent asphyxial death due drowning is very difficult task for autopsy surgeon at post-mortem examination. If body found lately after being drowned especially when the putrefaction sets in and fresh signs of drowning are absent. So the only naturally preserved sign can be seen during autopsy is middle ear haemorrhage. Though middle ear haemorrhage is not pathognomonic sign of drowning but it can be seen in more than 50% of drowning cases. When we have to make diagnosis unequivocal then it is to be made with consideration of signs found at autopsy, ancillary test like diatoms and circumstantial evidences. In view of external findings, positive diatom test, evidence of middle ear haemorrhage and absence of any other pathology most probable opinion as to cause of death is asphyxia due to drowning.

Recommendation:

The present case being the case of fatal aircraft accident and as per the office of the director general of civil aviation (air safety directorate) circular no.6 of 2010 has laid down the certain notifications and autopsy guidelines for medical officers in cases of fatal aircraft accidents investigations. Some of them includes, to establish the causative agent for the crash and injuries sustained, to ascertain the presence of pre-existing disease or factor which might have incapacitated the individual and contributed to accident causation, examination of clothing and personal equipment, x-rays of whole part of body, all wounds, contusions and external injuries should be carefully noted, photographs should be taken of both the dorsal and ventral side of body, internal examination of the body cavity and organs, fractures in the rib cage anterior and posterior aspects should be looked for as it gives an indication of hyper flexion of the body, ruptures of heart, liver and diaphragm should be looked for, laceration of aorta indicates fractured ribs or decelerate forces, respiratory tract should be looked for soot or carbon particle, larynx oedema due to inhalation of toxic gases or foreign body, fractures or dislocations of vertebrae.

Specimen for histological examination includes pieces of all organs in 10% of formalin solution as early as possible should be preserved. 5ml of each blood and urine for ethanol with sodium fluoride as preservative, blood and muscle tissue for carbon mono-oxide are to be collected, preserved, stored and dispatched in frozen state without any chemical preservative, viscera for toxicological studies, brain tissue for lactic acid and muscle tissue for carbon mono-oxide are to be collected in polyethylene bag. [5]

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Case Report

DEATH DUE TO GAGGING BY AN ONION: A CASE REPORT

Dr. S. H. Bhosle, Dr. K. U. Zine, Dr. G. D. Niturkar, Dr. R. N. Wasnik

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Case Report

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Abstract:

Deaths due to mechanical asphyxiation constitute one of the most important medico-legal cases dealt by autopsy surgeons. Of these, death by gagging is very infrequent. The term “gagging” is used to describe the blockage of the internal respiratory passage by ramming certain objects into mouth. Usually, gag is used to prevent the victim from shouting for help during crime. Mostly soft materials like cloth are used as gag and use of hard material is unforeseen occurrence. Here we present a case of death of six years old girl due gagging by an onion.

Key words: Gag, Hard material, Onion.

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Key words: Gag, Hard material, Onion.

Introduction:

The term ‘asphyxia’ is commonly applied to a variety of conditions in which interference with respiratory exchange plays greater or lesser part¹. Deaths due to mechanical asphyxiation constitute one of the most important groups subjected to medico-legal autopsy. The causes of mechanical asphyxiation include hanging, ligature strangulation, throttling, smothering, gagging, choking, drowning and traumatic asphyxia etc. The violent asphyxial death caused by obstruction of internal airway by some object which includes gagging and choking is an infrequent occurrence. (1) In majority of these deaths, findings other than signs of asphyxia related to cause of death on external examination are lacking. Also, as decomposition sets in, the signs of asphyxia get obscured leaving findings of blockage of air passage as the only proof.

Choking refers to the blockage of internal airways, usually between the pharynx and the bifurcation of the trachea. The choking deaths are mostly accidental in manner. Gagging involves the securing of an obstruction across the mouth or within it². The manner of death in gagging is mostly homicidal. This form of asphyxia is mostly caused when pad or piece of cloth is thrust into the mouth. The article/gag not only fills up the mouth but also causes obstruction to air entry through the back of throat from nostrils.³

Here in this case report, we present the death of six years old girl due to complete obstruction of oro-pharynx and naso-pharynx by the onion. The death was a result of harsh punishment given by father by gagging her with an onion.

Case History:

On the day of incident in July 2016, after returning home from work the father of deceased girl was checking her academic progress at around 09.00 pm. At the same time, her mother was engaged in household activities. Father of child is a short tempered person and he got angry as she fails to recite numerical, as a punishment for her inability to narrate numerical repeatedly, he picked up an onion by side and used it as a gag to fill her mouth. As a result of this penalty, she started crying which augmented the anger of the father. Afterwards, in heat of anger he thrust that onion deeper in her mouth due to which she struggled for breath. On noticing this, her mother rushed to her and tried to remove onion by fingers and by thumping her back. But, she could not succeed and meanwhile, the girl collapsed. They immediately shifted her to a nearby private hospital where the girl was dead at the time of arrival. The history of accidental engulfing of onion by girl while playing was given by the parent to the attending physician.

Although, the attending physician did not register the case and informed the police; he orally declared the death and instructed relatives to take the body to Government hospital and inform the police. However, they carried the dead body to home and buried it with rituals.

The mother of the girl knowing the exact incident could not forgive the assailant father whose act resulted in death of her daughter. She consulted the child's maternal grandfather and lodged the police complaint after two days. Afterwards, exhumation was carried out and autopsy was conducted in mortuary of Government medical college, Aurangabad on third day after the incident.



Fig.1: Intact whole Onion in Oral cavity

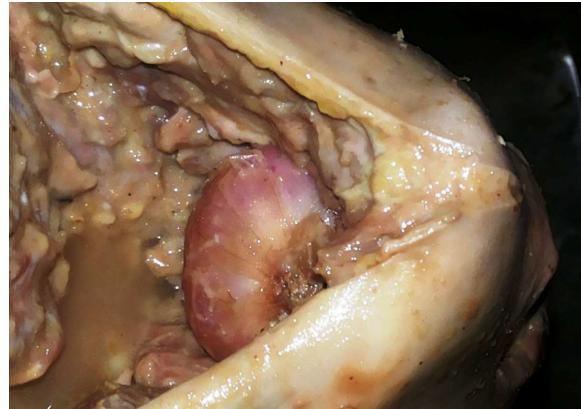


Fig.2: Intact onion obstructing the oro-pharynx and naso-pharynx

Autopsy Findings:

The external examination during autopsy showed signs of decomposition in the form of foul smelling swollen body with greenish discoloration all over and peeling of skin at places. No any visible external injury was evident on body except an abrasion of size 2 cm x 0.5 cm present over middle part of upper lip. Also, the internal examination of head and trunk did not detect any trauma to organs. On opening mouth, an intact whole onion was evident at posterior part of mouth (**fig.01**). On internal examination it was found impacted in the oro-pharynx and posterior part of onion touching the posterior pharyngeal blocking the airway from naso-pharynx (**fig.02**). The internal examination showed multiple contusions of varying sizes at posterior part of tongue, bilateral tonsillar pillars (Palatoglossal and Palatopharyngeal arches) and soft palate indicating extreme stretching by onion at the site (**fig. 03**). The onion weighed 25 grams having maximum circumference 11.8 cm. The cause of death was opined as, "Death due to Gagging by Onion".



Fig.3: Contusions at Posterior part of tongue and adjacent structures

Discussion:

Nowadays, education of children is the most important concern for the parents. However, punishment is not the good way to teach them as it may lead to insecurity, lack of confidence and degradation of their academic progress. In India, it has been observed that, girls are subjected more frequently to punishments for their so called wrong doings. Also, girls get harsher punishments as compared to boys. In the present case, a six years' girl was gagged to death by the onion as a mean of punishment for her poor progress in the school.

When gag is thrust into the mouth death is more likely to be result of pharyngeal obstruction and not due to nervous stimulation¹. Gag usually means rolled up cloth or other soft material pushed into the mouth sufficiently deep to block the pharynx which will cause asphyxia⁴. Cotton cloth is the most common soft material used as gag. However, other soft materials such as toilet paper, tissue paper were also reported by researchers⁵⁻⁷. But, in the present case a hard material onion had been used as gag which was rammed in mouth and got obstructed in oro-pharynx.

Gagging is mostly homicidal in nature and rarely suicidal. Homicidal gagging is common in children, females and old age group where least resistance is offered by victims. Although homicidal gagging is rare in healthy adult, the cases had been reported⁵⁻⁷. Yadav et al.⁸ reported a case of homicidal gagging which was concealed by fire and the rolled up cloth used as gag. Suicide by gagging is usually observed among persons suffering from psychiatric disorder.

The complaint was launched on third day of the incident by the mother. Afterwards, the crime was registered under 201, 302 IPC by the police against the father of deceased. However, this crime could be identified earlier if the death was registered and informed to the police by the private hospital where death was orally declared. In India, oral declaration of brought dead cases without informing the police by the private hospitals is not uncommon practice, if death is due to natural disease and/ or foul play is not suspected. Gag is commonly used to prevent the victim from shouting for help and death is usually not intended⁴. Such deaths, though unintentional, are still homicides if the victims die during the commission of a crime⁹. As the present incident occurred in the heat of anger, the death being unintentional without premeditation could be the ground for defense. However, the assailant's knowledge regarding likely fatality of such act would be of decisive consideration in present case.

The gag used may be completely thrust deep inside mouth and may not be visible on external examination. Thus, meticulous examination of naso-pharynx and oro-pharynx during autopsy will provide valuable evidence as to the cause of death. The signs of asphyxia being lacking are not useful in decomposed bodies. In such deaths, it's the discovery of the gag obstructing the airways that makes the diagnosis. During autopsy, contusions on the pharyngeal regions, palate, and base of tongue should be meticulously looked as it is indicative of marked stretching by the object. Parents should be counseled regarding bad effects of punishments and encouragement to use better methods for academic enhancement of their children.

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Case report

A RARE CASE OF FATAL SUICIDAL CUT THROAT INJURY- A CASE REPORT

Dr. C S Kulkarni, Dr. SS Agashe, Dr. SC Mohite

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Case report

A RARE CASE OF FATAL SUICIDAL CUT THROAT INJURY- A CASE REPORT

Dr. C S Kulkarni, Dr. SS Agashe, Dr. SC Mohite

Abstract

Cut throat injuries are mostly homicidal and rarely suicidal life threatening injuries. Mental illness, low socioeconomic status and unemployment are the major risk factors associated with self-inflicted injuries. We received a dead body of middle aged man for postmortem examination with cut throat wound over neck. After obtaining proper medical history (the deceased was a known schizophrenic), crime scene investigation and meticulous autopsy, we came to the conclusion that the cut throat injury in present case was suicidal in nature. This helped the investigation agency to rule out any possibility of homicidal manner of death. The detailed findings of the present case are discussed in this paper.

Keywords-Self Inflicted Injury, Homicide, Suicide, Mental Illness, Cut Throat Injury.

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Keywords: Self Inflicted Injury, Homicide, Suicide, Mental Illness, Cut Throat Injury.

Introduction:

Suicide is one of the ten leading causes of death in the world accounting for more than 400,000 deaths annually. The incidence and pattern of suicide vary from country to country where cultural, religious and social values play some role in this regard.¹ Psychiatric disorder is an usual if not invariable antecedent to suicide. Several studies have documented an excess mortality due to suicide among psychiatrically ill persons². Besides hanging and self-shooting, self-inflicted sharp force injuries are well-recognized method of suicide; the throat/neck region is a site which – thus easily accessible – might rarely be involved in such fatalities.³

Cut throat injuries may be homicidal or suicidal and they are potentially life threatening injuries because of the many vital structures in the neck which may be affected leading to severe hemorrhage, air embolism or respiratory obstruction and death.⁴ Therefore proper history, meticulous autopsy and crime scene investigation are important tasks for determination of manner of death, whether suicidal, accidental or homicidal for a Forensic pathologist in such cases. To our knowledge, this case presents a rare case of suicidal cut throat injury with psychiatric disorder.

Case report:

We received a dead body of middle aged 45 years old man for medicolegal postmortem at the mortuary of tertiary care institute. After going through the requisition papers, we came to know that the deceased was a known case of psychiatric illness (schizophrenia) and was under treatment for it. He used to sell roasted grams on the roadside but left the same since 2 years. Since 4 days he was talking irrelevantly. At midnight he came out of his room and cut his throat with a knife. The act was eye witnessed by two young boys. He was brought to casualty of the same institute where he was declared dead before admission.

Crime Scene examination:

The house was situated in a slum, having one room with open space in front. The deceased was lying in supine position in pool of blood over the floor in the open space. There was spurting of blood on the floor where the dead body was found. A knife was found lying next



Image 1: Cut throat wound over neck with multiple hesitation cuts

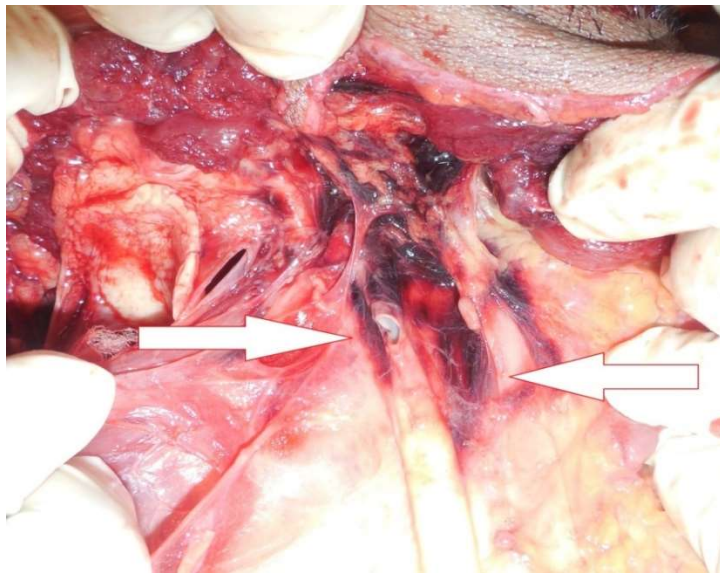


Image 2: Incised injury to left common carotid artery and left internal jugular vein.

to him. His clothes and the knife were seized by the police at the spot. The police sent the blood samples from the spot and blood stained knife for determination of blood group.

Autopsy findings:

External examination- The body was 165cm in length and weighed 51kg with dried blood stains over face, neck, both hands. Rigor mortis was fully developed all over the body and hypostasis was faintly appreciated over back. There were no signs of decomposition. Time since death was estimated as 9-12 hours before post-mortem examination consistent with the time of the alleged act.

External injuries: A single gaping cut throat incised wound of size 15cm in length and with maximum breadth of 3.2cm was present over the anterior aspect of neck. The depth of the wound over the left upper end was 4cm and superficial at lower end on right side i.e. subcutaneous tissue deep. It was directed obliquely downwards from left submandibular region to right muscular triangle of neck. It was 6 cm below lt. mastoid prominence & 10 cm below the right mastoid prominence.

In midline it was 8cm below chin and 5cm above the suprasternal notch. Near the lower border just lateral to midline on right side there were 4 superficial hesitation cuts with tailing of sizes 1x0.3cm, 0.8x0.3cm, 0.8x0.2cm and 0.7x0.2cm respectively. There were no other external injuries on the body including defense wounds. No evidence of contusion of the margins.

Internal examination: On careful dissection of the wound, it showed clean cut edges involving skin, superficial fascia, platysma, sternocleidomastoid muscle on left side, left internal jugular vein, left common carotid artery and anterolateral wall of laryngopharynx junction with hematoma over the soft tissues. On the right side there was no evidence of any injury to muscles and deeper tissues. These features were suggestive of sharp edged light weight weapon used for cutting of neck with multiple attempts. Stomach was empty and all the internal organs were intact and pale. Death was opined due to hemorrhage and shock as a result of cut throat injury (unnatural).



Image 3 Blood spurting at the crime scene.

Discussion:

Self inflicted sharp force injuries over neck are uncommon but well recognized method in suicidal fatalities. The distinction between homicidal, suicidal and accidental injuries is not an easy task for autopsy surgeon who needs to evaluate neck injuries in each case.³

As evident from the literature available from the past studies like Anand Ret al², Adoga AA⁴, Jain A et al⁵ mental illness, unemployment and low socioeconomic status are the strongest indicators of suicide. Also a 2005 report from National

association of state mental health program found mortality gap of 25 years between schizophrenia patients and general population concluded that 45% of mortality was related to suicide and other unnatural causes. Self mutilation is a common finding in schizophrenic's⁶. In the present case the deceased was known schizophrenic, belonged to low socioeconomic status and unemployed. He had visual hallucinations that some unknown person has killed his father. He was talking irrelevantly like "Mere Baap Ko Maar Daala" since 3-4 days before committing suicide.

Self inflicted injuries are generally located on accessible parts of body like neck, chest, flexor aspect of forearm etc. Suicidal cut throat injuries for a right handed person is seen over left side of neck directed from left to right and having greater depth at beginning with tailing on other side with hesitation cuts⁷. Hesitation cuts are described in 60-80% of such cases⁸. In present case, injury was present over the neck. The depth of the injury was more on left side and directed from left to right, above downwards with multiple superficial hesitation cuts at lower end suggestive of multiple attempts with divided state of mind. There were no defense wounds over the body of deceased. All these facts strongly point towards suicidal manner of cut throat injury.

Crime scene investigation must be considered to establish the manner of death in such cases of cut throat injuries. In our case after going through the crime scene report. It was revealed that there were no signs of struggle, deceased was found in pool of blood and weapon was seized by police authorities from crime scene. The incidence was witnessed by 2 young children. The weapon seized by the police was a light weight sharp edged iron blade with wooden handle. Blood was preserved for the determination of blood group of the deceased so as to match with the blood group of the blood preserved by the police from the crime scene and on the weapon. We had sent the blood to Forensic science laboratory and also to the FDA approved blood bank of the same institute. The blood group of the deceased was 'O' positive as reported by blood bank.

Forensic science laboratory reports have a major role to play in deciding the manner of death in such cases. Their reports are directly admissible in court of law as per the section 293 CrPc.⁹ Unfortunately all the blood group test results from the Forensic Science Laboratory were inconclusive including the blood sample preserved by the police from the crime scene. Hence it could not be matched with the blood group of the deceased.

Conclusion:

On prima facie evidence most of the cut throat injuries look homicidal but proper history, crime scene investigation and meticulous autopsy by forensic pathologist would correctly establish the suicidal manner of death in such suspicious cases. For the basic analytical tests like detection of blood group, the report from any FDA approved blood bank should be admissible in the court of law.

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Review Article

CAPITAL PUNISHMENT

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Review Article

CAPITAL PUNISHMENT

Dr. S. K. Singhal, Dr. Anish Singhal, Dr. Ashish Singhal, Dr. Neha Haswani

Abstract:

In the last 70 years almost 100 countries have banned death penalty. During the meeting hosted by UN Human Rights Council in Geneva on 4th March 2015, the UN Secretary General Ban Ki - moon declared that death penalty has no place in the 21st century. China executes thousands of people every year and USA is regularly awarding this punishment. 84 countries still retain this penalty. The advocates of Death penalty defend it on the ground that it has deterrent effect, is a certain type of punishment, is cheaper and that wrongful conviction is remote. Death penalty is no longer acceptable in modern society and a call to abolish it is made on the ground that it is inhuman, unnecessary, degrading, violative of fundamental rights and that it is not essential since crime rates can be controlled even without it and there is no spurt in homicidal cases on its abolition.

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Keywords: Capital punishment, death penalty, abolition of death sentence.

Introduction:

The term capital punishment is derived from the word “Caput” meaning head, since in the ancient times decapitation was the main mode, the presently employed methods include lethal injection, electrocution, gas chambers, firing squad & hanging etc. The seventh century B C Code of Hammurabi, Code of Athens, 5th century B C Roman Law & Kautilaya’s Arthshashtra, all had provision of death sentence. Since recent times there is a trend to abolish this penalty. In the last 70 years almost 100 countries have banned death penalty. During the meeting hosted by UN Human Rights Council in Geneva on 4th March 2015, the UN Secretary General Ban Ki-moon declared that death penalty has no place in the 21st century. China executes thousands of people every year and USA is regularly awarding this punishment. 84 countries still retain this penalty. The advocates of Death penalty defend it on the ground that it has deterrent effect, is a certain type of punishment, is cheaper and that wrongful conviction is remote. Death penalty is no longer acceptable in modern society and a call to abolish it is made on the ground that it is inhuman, unnecessary, degrading, violative of fundamental rights and that it is not essential since crime rates can be controlled even without it and there is no spurt in homicidal cases on its abolition.^{1,2,3, 4}

Aim of Study:

To study the constitutional validity of capital punishment, changes and trends in India, how effective is death penalty, present status and as to why it should be abolished

Materials:

All the relevant studies and reports in and outside India, related to the topic were analyzed and incorporated.

Provision of Death Penalty in India:

Death penalty is provided under Indian Penal Code, 1860 (IPC) Sec – 121, 132, 194, 195 (A), 302, 305, 307 (2), 364 A, 396, 376 A & 376 E. Also the various defense services acts NDPS 1985, SC & ST act 1989, Explosive Substances Act 1908 & the various acts governing control of organized crime have provision of death penalty.⁵

Constitutional validity of death penalty

The constitutional validity of capital punishment as being violative of article 14, 19, 21 was challenged before the Supreme Court in Jag Mohan Singh vs. State of UP (AIR. 1973, SC-947), Bachan Singh vs. State of Punjab (AIR 1979, SC – 916), Deena vs. Union of India (AIR. 1980, SC – 898) and it was held that the Death penalty is not violative of the constitution.^{6,7,8}

Changes and trends in death penalty in India

In the period 1950 – 55, the normal sentence for murder was death and whenever the court preferred to award lesser sentence, a reason was to be recorded under section 367 (5) of Cr. P.C. In 1955 this section was omitted and therefore it was not binding on the court to give reasons for not awarding capital punishment. In 1973, the Cr. P.C. was amended and the new section 354 (3) required the judge to state specific grounds for imposing death penalty, hence between 1973 – 80 imprisonment for life was the rule & the capital punishment was an exception. In Bachan Singh vs. State of Punjab, (AIR 1980, SC – 898), the SC held that life sentence was normal and death penalty should be awarded in “Rarest of rare” cases only. However till today it is difficult to prescribe what exactly is rarest of rare cases and it solely rests on the sweet will of the judges. Three recent presidents K.R. Naryanan, APJ Abdul Kalam & Pratibha Patil played a key role to practically end executions after 1997. In USA 1407 executions have been effected since 1976, 15 being women, largely by lethal injections (1232). In Australia the last execution in 1967 was by hanging.^{2,5,8,9}

How effective is death penalty?

The wisdom of proponents of capital punishment is a matter of animated debate and it has evoked a new interest as those condemned individuals who have the funds can prolong their case for years and those who do not have money silently and promptly go to the gallows.^{1,9}

In its origin, the death penalty was to placate Gods. Then came the theory of revenge, that the one who willfully wronged must be forfeited. Then was added the element of deterrence, that death penalty discourages criminal conduct. The eminent dean of law, Dr. George W. Kirchway in 1923 illustrated the wrongfulness of this claim. Murders committed in fit of rage, heat of passion are relatively immune to the deterrent effect. Even in premeditated homicides, fear of death penalty may create a brutalizing effect, inspiring more violence.¹⁰

The advocates of death penalty hold that it is more certain than imprisonment which may be terminated by escape, pardon or parole. Actually the death sentence is seldom imposed, many times commuted and rarely executed. Death penalty is held to provide incapacitation and recidivism i.e. there is no chance of repetition or reoffending.¹

Death penalty is defended on the ground that it is less expensive; however, it is proved that the costs are heavy because of length of trial, closed custody and security. Those who advocate death sentence consider wrongful conviction a remote possibility; however, it is known that mistakes occur due to mistaken identification, framed up or suppressed / destroyed evidence, hostile witnesses and excessive zeal on the part of investigators, prosecutors and politicians.^{11,12}

Death penalty has no deterrent effect

In India during 1953 – 1963, an average of 128 persons were executed per year but it had no effect on the number of murder cases which increased every year by 2.32% to 3.56%, between 1992 – 2012 there was virtual moratorium on death penalty. Dhananjay Chatterjee

was executed in August 2004, Mohammed Ajmal Amir Kasab in 2012 and Afzal Guru in 2013. Despite increase in population murder cases decreased significantly. In USA, the south has the highest murder cases inspite of the fact that it accounts for over 80% of the executions. The various antiterror legislations with scope for death penalty have been ineffective in checking terror attacks. Death penalty awarded to rape accused in several cases have failed to act as deterrent, and similarly public executions by beheading, stoning or by firing in Saudi Arabia, North Korea, Iran and Somalia have failed to deter criminals.^{13,14}

Present status of death penalty

The Amnesty International in reference to death sentence imposed on Mr. Zulfikar Ali Bhutto, former Prime Minister of Pakistan, had stated “we regard death penalty” to be cruel, inhuman and degrading and we feel that inherent in any trial, there is a risk of miscarriage of justice. In December 1977, the international conference, at Stockholm called upon the United Nations to declare death penalty as illegal. In India Mr. Jaya Prakash Narayan, Acharya J. B. Kriplani & others issued on appeal on 19.3.1978 to abolish death penalty. In 2012, 682 executions were reported in 21 countries, 314 in Iran, 129 in Iraq, 79 in Saudi Arabia & 43 in USA. China, Belarus & Vietnam do not publish its statistics. In Singapore since 1990, more than 420 persons were executed mainly for drug trafficking. In December 2014, 188 people were sentenced to death in Egypt for killing eleven police-men. On 12.1.2015 Saudi Arabia publically beheaded a woman by sword for sexually abusing her step daughter. On 18.1.2015, Indonesia executed six drug offenders by firing. On 18.2.2015 Mr. Salil Shetty, Secretary General of Amnesty International wrote an open letter to the president of Indonesia to review all the cases with a view to commute death sentences, stop executions and revise all legislations to remove death penalty. 64 people were awarded death sentence in India in 2014. 607 people were executed worldwide in 2014. The death penalty research project of the National Law University (Delhi) has found that in India 270 people are on death row. On 29.4.2015 Indonesia executed seven drug smugglers by firing squad. On 6.5.2015, an Afghan Judge sentenced four persons to death for killing a woman accused of burning Quran. Recently, North Korea executed its defense chief for dozing off at a military event. On 17.5.2015 Egypt hanged six people for killing 2 army officers. More than 150 individuals have been hanged in Pakistan mainly for terrorist activities, in the last few months, eight being on May 28, 2015.¹³⁻²⁹

Trend towards abolition

Under the Common Wealth law, death penalty was abolished in 1973. By 1986, 46 countries had abolished death penalty and this number rose to 89 by 2002. 22 countries have stopped using death penalty, and only 84 countries now retain this punishment. Interestingly, Michigan, Venezuela & Netherlands had abolished it as early as 1846, 1869 & 1870 respectively. Some of the abolitionist countries are Argentina, Australia, Austria, Bolivia, Brazil, Canada, Cape Verde, Colombia, Costa Rica, Cyprus, Denmark, Dominican Republic, Ecuador, El Salvador, Fiji, Finland, Federal Republic of Germany, France, Holy See, Honduras, Iceland, Israel, Italy, Kiribati, Luxembourg, Malta, Mexico, Monaco, Netherlands, New Zealand, Nicaragua, Norway, Panama, Papua New Guinea, Peru, Portugal, San Marino, Solomon Islands, Spain, Sweden, Switzerland, Tuvalu, United Kingdom, Uruguay, Vanuatu and Venezuela. Majority of the countries abandoned it on grounds of violation of right to life and dignity. The European Union has made the abolition of death penalty a precondition for entering into the union. Russia, Poland, Yugoslavia, Serbia, Montenegro and Turkey are at the verge of ending death penalty. In 2013, USA is the only country in America to carry out executions.^{3,5,10,15}

Conclusion

Abolition of death penalty is called for on the following grounds –

- 1) Majority of the murders are not pre meditated. Provocation, anger and loss of temper over shadow the sense of reasoning, deaden the intellect, chill his senses, debase his soul, blind him to the consequences and energize him to do the crime. After the cessation of temporary insanity he may become normal, may even repent for his conduct.
- 2) The death penalty has no scope for revision, is cruel for the accused and his family, degrades all concerned and violates the right to life
- 3) In no trial there is a guarantee that the trial was innocent and the punishment awarded was irrevocable.
- 4) It has been repeatedly observed that only poor and despised get this punishment, they have no means to get reprieve, respite or remission of their sentence.
- 5) Multiple studies have proved that there is no spurt in homicide when this punishment is stopped.
- 6) The physical pain and mental torture during the time one has to wait for the execution is a social paradox.
- 7) Except for the transitory trauma when such a convict is taken to the gallows or put in a gas chamber, it is not he but his family who in fact suffer because of the punishment of execution.
- 8) Considering all above, survival of death penalty is either due to lethargy or hysteria.

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