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b. **Books and Monograph:** Anemia, In: Cotran RS, Kumar V, Collins T. Robbins Pathologic Basis of Disease. 6th ed. Singapore. WB Saunders Company, 1999: 1300-1321. Wetzler M, Bloomfield CD. Acute and chronic myloid leukemia . In: Harrison"s Principles of Internal Medicine. 14th ed. Fauci AS, Braunwald E, Isselbacher K, et al, Eds McGrawHill, New york, 1998; 684-695.

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Editorial

Medicolegal Cases In Hospitals

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Medico-legal case (MLC) are the integral part of medical practice in the emergency departments and causalities of the hospitals. [1] Therefore, the physicians need to have the sufficient knowledge regarding their roles and responsibilities towards handling these medicolegal cases at healthcare institution to aid in court of law towards justice to the survivor/ injured. [2] Proper handling and accurate medical documentation of such medico legal cases is of prime importance to avoid legal complications and to ensure entitled benefits to the Next of Kin.[3]

Handling and documenting the medico legal cases is one of the important work at hospital and it need to be done accurately, completely, timely and comprehensively. [4] Sample collection as evidence is important towards giving justice to survivor/injured in medicolegal cases.[5] There are differences in the legal procedures being followed by different states, as the law and order is a state subject. Doctors need to be acquainted themselves with medicolegal procedures that are in vogue in the concerned state in which they are serving. [6]

The common medico legal cases brought to hospitals are assault and battery; domestic violence and child abuse; accidents like Road Traffic Accidents (RTA), industrial accidents etc. ; cases of trauma with suspicion of foul play; electrical injuries; poisoning; alcohol Intoxication; undiagnosed coma; chemical injuries; burns and scalds; sexual offences; criminal abortions; cases of asphyxia as a result of hanging, strangulation, drowning, suffocation etc. ; custodial deaths; death in the operation theatre; unnatural deaths; death due to snake bite or animal bite; fire arm injuries; drug overdose; drug abuse; brought dead/ found dead brought to hospital and deaths occurring within 24 hours of hospitalization with suspicion of foul play or without establishment of any diagnosis[7,8].

The hospitals have different formats in documenting the medicolegal cases by doctors at emergency/ casualty department. There is need of the uniformity in all these documentation and best practices should be adopted towards handling & maintaining medico legal records for future purposes.

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Hence, in depth research study on procedures & protocols on handling Medicolegal cases to find out various formats in handing the medicolegal cases and may evaluate/ suggest the best practices to deal with medicolegal cases solving the problems faced by doctors and administrators.

Conclusion:

The healthcare providers in emergency department and other concerned specialities should be aware of various procedural protocols, legal norms, various medicolegal forms or templates towards maintaining medico legal records. There should be uniform, national, prescribed operative general guidelines for doctors in relation to handling medicolegal cases while dealing with all types of medico-legal cases in healthcare institution and hospitals.

There are multiple challenges faced by doctors and administrators in handling medico legal cases. Hence, doctors providing such services should have appropriate sufficient knowledge in regards to handling such Medicolegal cases providing appropriate timely quality health care with necessary sample collections and appropriate Medicolegal documentations to aid in court of law to get the justice to the concerned.

Recommendations:

In consideration with the large workload of Medicolegal cases at various Government healthcare institutions and various big corporate hospitals, there is need of an appointment of a Chief Executive officer (CEO) cum Medicolegal-in-Charge in every Government/ private healthcare Institution to handle, execute and supervise the Medicolegal cases management.

The postgraduate speciality doctor with appropriate sufficient knowledge/ qualification in hospital administration/health management with additional knowledge of the state law/ appropriate qualifications in law may be assigned such responsibilities on priority to aid in court of law towards justice.

There should be mandatory standard formal training to all doctors dealing with Medicolegal cases at various Government & private healthcare institutions in their probation period at joining and further continued training in Medicolegal updates, innovations and technological advancement in healthcare delivery with its legal & ethical issues.

The Medicolegal associations at state and national level should come forward hand in hand with Government academic & other organizations take appropriate lead towards the organizing Medicolegal training workshops, CMEs, CPDs, seminars, symposium, webinar and multidisciplinary conferences for strengthening the practical competence of the healthcare providers aiding to justice at large.

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Original Research Article

ECG findings & QTc Interval- Prognostic Predictor of Organophosphorous Poisoning

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Article Info

Key words
Organophosphate (OP)
ECG Findings
Qtc
Ventillatory Support
Prognostic Factor

Abstract

The study was aimed to assess the prognosis of patients with organophosphate (OP) poisoning from the QT interval (QTc) and other ECG findings. On admission ECG analysis was done and QTc was monitored in each patient. Demographic profile and clinical findings were noted. Patients with Ventillatory support given on admission were compared with those without support for prognosis. It is found that the group with Ventillatory support had bad prognosis showing 57.41% mortality. ECG findings like ST segment, T wave was not significant with the outcome, QTc also do not show significant correlation with the prognosis while PR interval was significant in predicting the outcome.

These results suggest that during initial hospital care of patients with Organophosphorous poisoning, If ECG findings & QTc is monitored along with the general condition of patient it will help the health care provider for better treatment and effective triage.

1. Introduction

An insecticide is a substance used to kill insects. It can be ovicides or larvicides used against insect eggs and larvae, respectively. They were used in large number in agriculture to increase the productivity of crops especially in the 20th century and are a cause of concern in the developing countries like India. Organophosphorous compounds have been employed as pesticides, petroleum additives and chemical warfare nerve agents. For the first time, organophosphates were synthesized by Von Hoffman. In 1873, he synthesized methyl phosphorous chloride, which led to the synthesis of number of insecticides.[1]

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Pesticides are important to the life of the people and governments of third world countries. They are extensively used both in the agriculture and in public health programmes. Pesticides are used to control the pests, which helps to increase crop yields. It also helps to eradicate vector borne diseases. Proper knowledge of precautionary measures and its strict implementation is necessary to prevent the hazards of pesticides.[2]

The world health organization estimates that one million serious unintentional poisoning occur every year in addition to two million cases of attempted suicides with pesticides.[3,4] Organophosphate (OP) poisoning is occasionally accidental and in many South Asian countries it is one of the most common causes of deliberate self-harm next only to occupational poisoning causing difficulty in management.[5]

Organophosphorous Poisoning is the most common poisoning in India because of its easy availability, cheap and hence a source of both intentional & unintentional poisoning and also possesses the potential to cause serious harm & even death in Human beings. It can be taken by Oral, respiratory and /or transdermal route.[6]

The absence of specific laboratory tests prompts for a clinically based prognostic system. A relationship between a prolonged QT (QTc) intervals on the electrocardiogram (ECG) and organophosphorous poisoning has been reported in few studies. It helps in assessing the severity and prognosis of the organophosphorous poisoning.[7] Prompt recognition and aggressive treatment of acute intoxication is essential in order to minimize the morbidity and mortality from these potentially lethal compounds. Defining the factors that affect the prediction of mortality and prognosis in Organophosphorous poisoning will help guide follow up and treatment in the intensive care unit.[8]

The present study was undertaken to study the magnitude of the problem and to arrive at creation of policy guidelines for the health care providers from ECG findings so that the patients can be evaluated in terms of severity of poisoning and prognosis and the needy patients are referred to higher centers within time for a favorable outcome.

Aim:

To evaluate the prognosis of Organophosphorous poisoning from ECG findings and QTc with respect to outcome.

Objectives:

1. To study Organophosphorous poisoning with respect to its Demographic profile.
2. To study the role of prognostic value of prevalent Clinical indicator QTc in Organophosphorous poisoning.
3. To assess the role of ECG findings, ST segment T-Wave and PR interval in Organophosphorous poisoning to predict the prognostic outcome.

Ethical clearance: The study was approved by the Institutional Ethics Committee.

2. Materials & Methods:

The cross sectional prospective observational study was done on 106 patients admitted to the Tertiary Care Hospital in the rural set up of Vidarbha region in Wardha District of Maharashtra state in Central India with history of exposure to Organophosphorous compounds from July 2013 to 2016.

Inclusion Criteria:

- Patients exposed only to organophosphorous compounds

confirmed by history and Circumstantial evidence.

- Patients who had not received any kind of treatment before assessing the clinical severity.

Exclusion Criteria:

- Patients consuming organophosphorous with some other drugs like Alcohol etc.
- Patients who had received the treatment prior to admission.
- No concrete evidence of time of exposure and lack of circumstantial evidence of organophosphorous poisoning
- Patients of paediatric age group.

3. Results:

The present study includes 106 cases with acute Organophosphorous Poisoning admitted to Acharya Vinobha Bhave Rural Hospital, Sawangi Meghe, Wardha, Vidarbha Region (Maharashtra State). Majority of the patients were between the age group of 21-30 years (yrs) i.e. 51 (48.11%). Mean age of the patient was 30.10 ± 12.36 (14-65 years) as shown in **table no.1.**

Table 1: Distribution of patients according to their age in years

Age Group(yrs)	No of patients	Percentage (%)
12-20 yrs	21	19.81
21-30 yrs	51	48.11
31-40 yrs	18	16.98
41-50 yrs	6	5.66
>50 yrs	10	9.43
Total	106	100
Mean ± SD	**30.10 ± 12.36(14-65 years)**	

Majority of patients were male 74 (69.81%) and females were 32 (30.19%) and M: F ratio was 2.2:1 as shown in **Table no. 2.**

The organophosphorous compounds causing toxicity to the patient were divided into 4 groups: **Insecticides** (n=84) for e.g. Malathion, Parathion, Chlorpyrifos, Dichlorvas etc.; **Rodenticides** (n=14) like Zinc Phosphide, Phoskil etc.; **Herbicides** (n=6) like Nitrofox, Phosphoric acid, Chlorphenoxy compounds etc.; **Fungicide**s like Captofol, Potassium Phosphate etc. (n=2) as shown in **table no.3.**

Table 2: Distribution of patients according to their gender

Gender	No of patients	Percentage (%)
Male	74	69.81
Female	32	30.19
Total	106	100
M:F Ratio	**2.2 : 1**	

Table 3: Distribution of patients according to Group of Organophosphorous compounds

Group of OP Compounds	No of patients	Percentage (%)
Insecticides	84	79.25
Rodenticides	14	13.21
Herbicides	06	5.66
Fungicides	02	1.89
Total	**106**	**100.00**

According to the history 94 (88.68%) cases were of suicidal attempt with oral ingestion of Organophosphorous agents while 12 patients (11.32%) had accidental exposure due to inhalation or skin contact as shown in **Table no. 4.**

Table 4: Distribution of patients according to cause/ manner of contact

Cause/Manner of contact	No of patients	Percentage (%)
Accidental	12	11.32
Suicidal	94	88.68
Total	**106**	**100.00**

Table 5: Distribution of patients according to route of poisoning

Route of poisoning	No of patients	Percentage (%)
Oral	94	88.68
Inhalation	08	7.55
Inhalation & Skin Contact	04	3.77
Total	**106**	**100**

According to the history 94 (88.68%) cases were due to oral ingestion, 8 (7.55%)

were due to inhalation and 4 cases (3.77%) were due to inhalation or skin contact as shown in **Table no. 5.**

There was no significant correlation between time elapsed for treatment after exposure to Organophosphorous poisoning (Ӽ2-value **0.81p=0.66, NS**) as shown in **Table no.6**

The patients with poor condition, death occurred in 37.04%, while 100% patients survived and were discharged with fair condition and it was significant to the outcome of the patient (Ӽ2-value 21.34, p=0.0001, S) as shown in **Table no.7.** Out of 106 death occurred in 14 cases shows mortality rate of 13.2 %, where as 92 patients were discharged (86.80%) as shown in **Table no.8.** On ECG examination, The ST segment (Ӽ2-value 2.82, p=0.58, NS) and T wave findings (Ӽ2-value 22.75, p=0.089, NS) were not significant with the outcome as shown in **Table no. 9 & 10.**

Table 8: Distribution of patients according to outcome

Outcome	No of patients	Percentage (%)
Discharge	92	86.80
Death	14	13.20
Total	106	100.0

PR interval was significant in predicting outcome in the present study. Mean PR interval for discharge patient was 0.14±0.02 and dead patient 0.16±0.02. (t-value 3.15, p=0.002, S) as shown in **Table no.11.**

QTc was determined by Bezetts formula. The mean QTc value was 0.45±0.08 in discharged patients and 0.48±0.08 in patients who died. It was not significant to predict the poor outcome. (t-value 1.80, p- 0.06, NS) as shown in **Table no. 12.** The Sensitivity and specificity was as per shown in **Table no.13.**

Table 6: Correlation between time elapsed between exposure and treatment with outcome

Time	Total	Discharge	Death	Ӽ2-value
0-6 hrs	77(72.64%)	68(88.31%)	9(11.69%)	0.81 p=0.66,NS
7-12 hrs	25(23.58%)	21(84%)	4(16%)	
13-24 hrs	4 (3.77%)	3(75%)	1(25%)	
Total	106 (100%)	92(86.79%)	14(13.21%)	
Mean ± SD	**6.01±4.41(0.01-24 hrs)**			

Table 7: Correlation of general condition of patients with outcome

General Condition	Outcome			Ӽ2-value
	Total	Discharge	Death	
Poor	27(62.96%)	17(62.96%)	10(37.04%)	21.34 p=0.0001,S
Average	27(85.19%)	23(85.18%)	4(14.81%)	
Fair	52(100%)	52(100%)	0(0%)	
Total	106(100%)	92(86.79%)	14(13.21%)	

Table 9: Distribution of ECG Findings according to outcome: ST

Outcome	↑ in V1,V2	Depression in III, avF	Flattening in I, avL	Flatten-ing in II, III	Flatten-ing in V5, V6	WNL	Total
Discharge	1 (1.06%)	1 (1.06%)	1 (1.06%)	1 (1.06%)	0 (0%)	88 (93.62%)	92 (86.79%)
Death	1 (7.14%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	13 (92.86%)	14 (13.21%)
Total	2 (1.89%)	1 (0.94%)	1 (0.94%)	1 (0.94%)	0 (0%)	101 (95.28%)	106 (100%)
Ӽ2-value	**2.82,P=0.58,NS, p>0.05**						

Table 10: **Distribution of ECG Findings according to outcome: T Wave**

Outcome	Discharge		Death		Total	%
	F	%	F	%		
↓ in avF	1	100.00	0	0.00	1	0.94
↓ in avL	2	100.00	0	0.00	2	1.89
↓ in avL, V1, V2, V3	0	0.00	1	100.00	1	0.94
↓ in I, avL	2	100.00	0	0.00	2	1.89
↓in II, III , avF	1	100.00	0	0.00	1	0.94
↓ in II, III, V5, V6	1	100.00	0	0.00	1	0.94
↓ in III	6	100.00	0	0.00	6	5.66
↓ in III, V1	1	100.00	0	0.00	1	0.94
↓ in V1, V2	2	100.00	0	0.00	2	1.89
↓ in V3	1	100.00	0	0.00	1	0.94
↓ in V4, V5, V6	0	0.00	1	100.00	1	0.94
↓ in V2, V3	0	0.00	1	100.00	1	0.94
↓ in V2, V3, V4, V5	1	100.00	0	0.00	1	0.94
Tall T in I,II	1	100.00	0	0.00	1	0.94
Tall T in V2,V3,V4	1	100.00	0	0.00	1	0.94
WNL	72	86.75	11	13.25	83	78.30
Total	92	86.79	14	13.21	106	100.00
χ2-value	**22.75,p=0.089,NS, p>0.05**					

Table 11: **Distribution of ECG Findings according to outcome: PR**

Outcome	No of patients	Mean PR ±SD	t-value	p-value
Discharge	92	0.14±0.02	3.15	0.002,S
Death	14	0.16±0.02		
Total	106	0.14±0.02		

Table 12: **Distribution of ECG Findings according to outcome: QTc**

Outcome	No of patients	Mean QTc ±SD	t-value	p-value
Discharge	92	0.45±0.08	1.80	0.06,NS
Death	14	0.48±0.08		
Total	106	0.45±0.06		

Table 13: **Sensitivity and Specificity of GCS Score and QTc Score with outcome**

Parameters	Best Cut Off	Sensitivity(95% CI)	Specificity(95% CI)	AUC(95% CI)
QTc Interval	0.46	51.09% (40.44-61.66)	71.43% (41.90-91.61)	0.387 (0.23-0.54)

4. Discussion

Organophosphorous compounds are largely been used as insecticides or pesticides all over the world. Because of its rampant use and easy availability and affordability, there is a gradual increase of suicidal and accidental poisoning. [56] In India the mortality rate varies between 15-30% and is the fourth major cause of mortality in rural India [66, 95]. In the present study, the total mortality rate was 13.20% (14 deaths in 106 patients). The mortality rate due to Organophosphorous exposure ranges from 10-25% in previous studies. [3, 6] Suicidal mode of poisoning by Organophosphorous is common

in developing countries as well as other parts of the world. In the present study, suicidal manner of poisoning was common followed by accidental which were 88.68% and 11.32% respectively and route of exposure in all suicidal cases was oral followed by inhalation or dermal contact in accidental cases. These findings are consistent with previous studies. [4] This is due to easy availability of organophosphorous compounds as a household poisons.

QTc interval prolongation might be an important risk factor for mortality after Organophosphorous poisoning as recorded in the literature. [9] The present study carried out the analysis of ECG findings taken at the time of admission to predict the mortality. It includes analysis of ST-T segment and T wave abnormality, PR interval and QTc interval. QT interval was corrected according to the formula of Bazett. QTc = QT / Sqare root of RR. QTc is prolong if > 0.41 sec in Men and if > 0.42 sec in women. [10] The ECG findings are summarized in tables no 22, 23& 24. The PR interval value was significant with the outcome. The Mean value for patients who died was 0.16±0.02 and in discharged patient was 0.14±0.02 (t-value 3.15 and p- 0.002, S). QTc was not significant with the outcome. But the QTc was prolonged in the patients who died with mean value of 0.48±0.08 and less in discharged patients 0.45±0.08 (t-value 1.80, p- 0.06, NS). The findings are consistent with the reported literature. [8,10,11] The mechanism of cardiac symptoms occurring in Organophosphorous poisoning is not yet understood clearly. It can be due to parasympathetic and sympathetic overactivity, hypoxemia, acidosis, electrolyte imbalance etc. [11]

5. Conclusion

Organophosphorous compounds are commonly used in developing and agrarian countries like India. The system of checks and monitoring on its purchase and use by the government needs to be strengthened in order to reduce the suicidal intentional poisoning as it affects the most productive age group of the society as evident from the present study.[4]

Early and rapid diagnosis and prompt treatment may reduce the mortality rate due to Organophosphorous poisoning. The mortality rate in the present study was 13.2%.

In the present study, 106 cases of Organophosphorous poisoning were studied and it was found that the mean age was 30.10 ± 12.36 (14-65 years) and most of the patients were from 21-30 yrs of age (48.11%) followed by 12-20 yrs of age group (19.81%). This is because of young patients working in the agricultural field and secondly students and housewives committing suicides in this age group due to easy availability of common household poisons.

Out of 106 patients, males were dominant in the study with 74 cases (69.81%) and 32 were females (30.19%) with M: F ratio 2.2:1. This is due to males being more engaged in the agricultural fields in central India.

Suicidal mode was found to be more common (88.68%) as compared to accidental exposure (11.32%). This is due to easy availability of organophosphorous compounds as a household poisons.

Suicidal cases were mostly due to oral ingestion (88.68%) followed by inhalation (7.55) and inhalation & dermal contact (3.77).

The time lag between the exposure and treatment received was not significant however, there was a direct correlation ship between the time elapsed and mortality. Mean hospitalization period was 6.17±4.52 and it was not significant to the outcome though the average period in cases who died was 5.50 ± 5.22 as compared to discharge cases 6.24 ± 4.42.

Analysis of ECG findings taken at the time of admission shows that ST-T segment and T wave abnormality were not significant in predicting the outcome whereas, PR interval has a significant co relationship with outcome. QTc was also not found to be significant but QTc value was more in patients who died as compared to the discharge patients. ECG examination at the time of admission may help in predicting the poor outcome of the Organophosphorous poisoning which can be carried out immediately if facility is available.

Conflict of Interest: None.

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Review Article

Cultural Diversity in Relation with Legal Medicine in India

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Abstract

India is a country with a diverse range of cultures, ethnicities, religions and languages. The diversity of religion within our world's population brings challenges for health care providers and systems to deliver culturally competent medical care. Cultural competence is important and expected from healthcare professionals while dealing with the end of life care, issues related to organ transplant and others.

1. Introduction

"Bioethics is still largely entangled in social, cultural, and decontextualized philosophical, moral, and legal discourses. It has yet to investigate comprehensively the social and cultural realities that matter to diverse patient populaces." [1]

The United Nations Educational, Scientific and Cultural Organization (UNESCO) defined culture as follows: "... culture should be regarded as the set of distinctive spiritual, material, intellectual and emotional features of society or a social group, and in addition to art and literature, it encompasses lifestyles, ways of living together, value systems, traditions and beliefs." [2]

There are legal and ethical considerations to take into account when working with diversity issues.

Human Organ Transplantation :

One of the challenging issues for medical team in organ transplantation is the religious and cultural viewpoints towards organ donation among different populations. [3] It is well-known that these beliefs in religious countries, particularly in Asian regions, play a pivotal role in behaviour and decision making regarding organ donation. [4]

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However, little attention and effort has been made to promotion such a positive action. There are numerous examples of positive attitudes towards tissue and organ transplantation in religions. As an example, in The holy *Qur'an* (The holy book of Muslims), it is well-illustrated that removing organs, as the only way of treating the ailment, can be acceptable and the donor and their family members must give the necessary consents to do so. [5]

As per Transplantation of Human Organs *Act*; for living donation - it defines who can donate without any legal formalities. The relatives who are allowed to donate include mother, father, brothers, sisters, son, daughter, and spouse. Recently, in the new Gazette grandparents have been included in the list of first relatives. The first relatives are required to provide proof of their relationship by genetic testing and/or by legal documents. In the event of there being no first relatives, the recipient and donor are required to seek special permission from the government appointed authorization committee and appear for an interview in front of the committee to prove that the motive of donation is purely out of altruism or affection for the recipient.

The donors relationship with the recipient, period of acquaintance and the degree of association, reciprocity of feelings, gratitude and other human bonds are perhaps some of the factors which would sustain 'affection and attachment' between two individuals. In Jainism, compassion and charity are considered to major virtues. Organ donation has been widely supported by the Jain community leaders and monks. [6] It has been reported that in Mumbai, 85-90% of all organ donations including eye donations, are by Jains and Gujaratis (a significant fraction of them are Jain in Mumbai. [7] Gujarat has had considerable success with the eye donation program due to a significant population of the Jain community, which considers eye donation as a sublime form of charity.

In Hinduism, the physical integrity of the body after death is not considered important. [8] Hindus value reincarnation and prolonging life which allows for many individuals to agree with organ donation.[9] Life after death is a strong belief of Hinduism and is an ongoing process of rebirth. It is a perpetual circle of birth and rebirth of the soul, so the physical body is insignificant. The effects of this view on the concept of organ donation and transplantation in Hinduism are various.[10] Other Dharmic faiths also hold similar views.

Altogether, cultural and religious views have important roles in the formation of beliefs about organ donation. By considering diversities in this regards, health professionals are able to react properly. Also, providing an opportunity to consult with a religious leader about organ donation can help families passing through hard circumstances in order to make the best decision. Probably more than in any other field of medicine, the cultural influences are very prominent in transplantation due to the complexity of the process and the ethical issues surrounding every step from donation, access to transplantation to outcome. These influences have led to different practical approaches around the world, which aim to be in agreement with the respective societal principles and moral values.

Respect for cultural diversity and a better understanding of the cultural influences are means of building a stronger support for transplantation and ensuring the success of organ donation campaigns. As the use of cadaveric donors is culturally difficult to accept in the Far East, similarly, the use of multiple live donors and a quick work-up of family members in acute organ failure situations are not yet accepted in western society. In Middle Eastern

countries, living donor organ transplantation continues to be the primary form of transplantation despite an acceptance of cadaveric donation by the Muslim religion. However, due to the shortage of organs, some countries, such as Kuwait and Iran, have introduced the concept of "rewarded gifting" for the living donor and for the family of the deceased donor. [11]

Many of the initial public misgivings about brain stem death, cadaveric donation and subsequently living donation, have been set aside by the fact that no major religion around the world forbids donation or transplantation from living or deceased donors. Despite that, a multitude of other factors which play an important part in the cultural make-up, have contributed to the different ways in which organ donation developed in different regions across the globe. Organ transplantation has spread beyond cultural boundaries and is providing more and more patients with a new hope for life.

Medical Termination of Pregnancy:

Religions have ideas about the subject of personhood. The fetus is a human person just after ensoulment takes place. Ensoulment is breathing the soul by God into the fetus. According the Roman Catholic Church, the ensoulment takes place just after conception. According to most Islamic schools, however, the ensoulment takes place 4 months after conception. According to these beliefs, Muslims and Christians have their own ethical opinions and judgments about the abortion, assisted reproduction and contraception. These opinions should be respected and their believers should be free to practice based of them. [12]

Distinct cultural differences between the states in northern India and the states in southern Indian have important implications for abortion seeking behaviour. There is some evidence that the incidence of legal abortions is higher in the south than in the north. [13] Induced abortion for northern women is probably more often viewed as one of many forms of birth control, whereas induced abortion for southern women is probably more often viewed as a resolution of contraceptive failure. [14] Generally, these sociocultural differences between northern and southern India translate into greater overall women's status and lower levels of son preference in the south. These underlying cultural and contextual influences on southern and northern women's behavior should result in important regional differences in the predictors of induced abortion. [14] The underlying cultural and contextual factors result in important differences in the predictors of induced abortions in the states. The other reason could be that the southern states have higher women's literacy rates and development indices, which means they may have better and more effective contraceptive use. It was also anticipated that there would be less variation in abortion-seeking behaviour across different groups of women in the southern group of states than in the northern group. The perception of small family norm is comparatively a new occurrence in the northern states of India, which gradually emerged with increasing women's education and employment. The diffusion of the small family norm, however, is greater and already existed for southern women in contrast to northern women. [15, 16]

Euthanasia:

Despite the heavy emphasis on intensive care and medical interventions, most people around the world die at home without any medical intervention. Not surprisingly, the economic wealth and cultural heritage of the country are most important determinants of where people die.

Culture is crucial because it creates the context within which individuals experience life and comprehend moral meaning of illness,

suffering, and death. "The ways the patient, family and the physician communicate and make decisions in the end-of-life care are profoundly influenced by culture." [17] For instance in India, where illness is more a shared family affair than an individual incident, a physician is likely to respect the family's wishes and withhold the truth about the diagnosis of a fatal disease to the patient while in Germany a physician is legally required to inform the patient about the disease. Similarly, while advance directives are virtually non-existent in India, in Germany they are regarded as mandatory and health care is covered by insurance.

In relation to the acceptance of euthanasia, because of secularization, religious people in the Netherlands tend to be more liberal and progressive as compared to countries where there is still a more conservative religious climate like Italy, although Christian people in the Netherlands are still more likely to be against assisted suicide when compared to their non-believing fellow countrymen. [18]

POCSO:

The Protection of Children from Sexual Offences: The POCSO Act 2012 defines a child as any person below the age of 18 years and provides protection to all children under the age of 18 years from sexual abuse. The minimum age of consent for sexual intercourse was raised from 16 to 18 years only in November 2012, when this Act came into force.

Exception 2 to Section 375 (rape) of the Indian Penal Code, which permits "intrusive sexual intercourse with a girl aged between 15 and 18 only on the ground that she is married.

Child marriage**:** Child marriage and consummation of the same are considered illegal for the purposes of POCSO. In India, even though child marriage is prohibited under the secular law, it enjoys sanction under certain personal laws, thereby creating a deadlock between secular laws and personal laws. The definition of "child" as per Section 2(d) includes any person below the age of 18. Age is the only criteria under POCSO. Sections 4 and 6 punish the offenders for having such sexual intercourse with a "child". However, the consent clause is not included here unlike in case of rape under IPC. Thus, even consensual sexual intercourse is punishable. According to some personal laws, marriage is valid with a person below the age of 18. According to the personal laws, marriage being the only means of legalising sexual intercourse between two individuals, such physical relations between a husband and wife who have not attained majority according to the Indian legal standards is perfectly valid as per the personal laws. But, the POCSO doesn't make any such exception and draws a uniform line solely on the ground of age. The conflict between the two laws is likely to arise, wherein one allows 'child' marriage, but the other criminalises it, 'child' being one determined on the basis of a certain age. Moreover, the problem worsens by the presence of another conflicting law. The Prohibition of Child Marriage Act, 2006 defines a 'child' as one who has not completed the age of 21 in case of males and the age of 18 in case of females. Where on one hand, the POCSO does not distinguish between a male and a female child, the 2006 Act draws this distinction, thus leading to a conflict. Though the 2006 Act makes such marriage as voidable at the instance of either of the parties, the three laws viz., the 2006 Act, POCSO and the personal laws, combined lead to a ruckus due to the conflicting legal prepositions.

Many countries have 16 years or below that as the age of consent. Most of the American states, Europe, Japan, Canada, Australia, China and Russia fall into this category. The National Crime Records Bureau

data reveals that about half of the POCSO Act cases fall in the category of 16-18 years age group. Removing cases of consensual sex under this category can help us get a better picture of sexual assault cases.

While 16 remains the average age of consent in Europe and beyond, there are dramatic differences globally. In some countries, you have to be married before you have any sexual relations (Iran, Pakistan and Saudi Arabia). In other countries, you can have sex from the age of 11 (Nigeria) and quite a few countries allow the age of consent to be 13, including Japan and Niger. For many, for the age of consent to be so low is unthinkable. But it may reflect the traditions, religion, culture and history of a particular country.

Perhaps the laws of consent need to be more flexible and realistic to ensure that young people are protected.

Conclusion:

Transparency, education and communication will bridge the gap between cultures and will ensure the continuous success of our endeavours but will require a global effort and cooperation which must stretch beyond geo-political, economical and cultural barriers.

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Review Article

Consent in Context to Medical practice

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Article Info

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Abstract

Now a day's consent plays an important role in medical field. Consent is always required for examining a patient for therapeutics purpose or while preparing a medico legal reports. Each medical professional should follow medical ethics and should not ignore taking consent from the patient as it may lead to many mishaps. Author has discussed various issues in relation to consent, types of consent, rules of consent, relation between age and consent and the cases where examination can be done without consent.

1. Introduction

CONSENT: The definition of consent is (noun) agreement, accord, harmony and instance of this. (According to oxford English dictionary)[1]. Legally, consent is defined as two or more parties agreeing on the same things in the same sense.[2]

Types of consent

1. Implied consent
2. Expressed consent (May be verbal or written)
3. Informed consent

Implied consent: It implies just by the act and conduct of the patient. The action of the person tells that he has given his consent. This type of consent is by far the most common, both in general and hospital practice. For instance, if a patient holds out his arm for an injection, it is implied that he has consented for that injection. It implies consent to medical examination in a general sense but not to procedures more complex than inspection, palpation, percussion and auscultation.[3]

Expressed consent:

A patient is said to have given an express consent, when the procedures to be adopted are explained to him in clear and unambiguous terms, and he expressly agrees to the same. It can be verbal or written. In a written consent, the doctor clearly states on a piece of paper what he intends to do and the patient puts his signature on that piece of paper. Before doing a surgical procedure, it is a common practice to take a written express consent from the patient or his relative.[4]

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Informed consent: Informed consent is a consent obtained by doctor after giving the full information to the patient regarding his disease, modalities of the treatment and options. In other words, it means that the doctor has explained all available treatments, their pros and cons, their success and failure rates, their costs and their after effects, and only after that he has obtained the consent of the patient for a particular treatment option (Section 90 IPC). Informed consent was practically nonexistent till the time COPRA (consumer protection act) came into existence. More than ethical moral duty it is a legal need on the part of doctor patient relationship.[5]

2. RELEVANCE OF CONSENT IN MEDICAL PRACTICE

A doctor may be charged with offence of battery/assault (Section 351 IPC) or even medical negligence, if he or she has failed in obtaining consent on giving all instruction about the procedure of treatment, prior to its commencement.[6] However, one may consider following three situations to understand the relevance of consent in practice of medicine-

a. Consent in relation to certain diagnostic and therapeutic purpose.
b. Consent and certain deviations and exceptions.
c. Consent in relation to medicolegal purpose.

3. RULES OF CONSENT[4,5,6]

- Consent should be always free, voluntary, informed, clear & direct.
- If any procedure beyond routine examination (i.e. inspection, palpation, percussion or auscultation) is intended, it is best to obtain on express consent.
- The doctor should inform the patient that he has the right to refuse examination. If the patient refuses, the doctor should not proceed with the examination.
- Act not intended to cause death, done by consent in good faith for a person benefit is not an offence (**Section 88 IPC**).
- Act done in good faith for the benefit of a child or an insane person by the consent of his guardian, is not an offence (**Section 89 IPC**).
- Consent known to be given under fear or misconception of facts, is not a valid consent (**Section 90 IPC**).
- **Section 90 IPC** - Determines the criteria for an individual to give a valid consent and accordingly he or she should be – mentally sound, no under any fear/threat, not under false conception, not under intoxication, above the age of 12 years.
- **Section 92 IPC** – Nothing is an offense by reasons of any harm which it may cause to a person for whose benefit it has been done in good faith, even without that persons consent, if circumstances are such that it is impossible for that person to sign consent, or if the person is incapable of giving consent and has no guardian or other person in lawful charge of him from whom it is possible to obtain consent in time for thing to be done with benefit. Case example- A victim of road traffic accident who is unconscious and with evidence of intracranial trauma clinically and requiring necessary surgery to save life. Doctor need not wait to take consent can proceed with surgery in good faith with appropriate medical documentation.
- **Doctrine of informed consent**- This is essential in medical practice, when diagnosing or treating is beyond the routine methods, where in risks are involved. Doctor should explain all relevant details to the patient such as – about the disease, about the diagnostic tests, about the treatment plan that is proposed and other alternatives possible, about the risks involved and prognosis.

- **Doctrine of therapeutic privilege** – is an exception for the rule of consent namely rule of full disclosure. Detailed explanation given at times, to any one of the close relatives of the patient, as necessary.
- **Blanket consent is not valid -** A doctor should take the consent for a specific procedure/operation and not for doing any other kind of operation.
- **In loco parentis –**It literally means in place of parent. When the parents cannot immediately be reached for a consent, the immediate person in charge can give the consent. E.g. a school teacher can give consent for treating a child who becomes a sick during a picnic away from home town, or the consent of the head master of a residential school.
- **Professional Secrecy –** Doctor should not convey to anyone, what the patient has consulted for or the fact revealed in history or on examination by doctor.

4. CONSENT IN RELATION TO MEDICOLEGAL MATTERS [4,5,6,7]

- Marriage and conjugal obligation consent in relation to these matters such as sterilization, artificial insemination etc., consent of both partners should be obtained.
- Pregnancy (for examining to confirm it) and delivery, consent (oral/written) must be obtained in advanced from concerned woman. If this is not possible consent must be obtained from her husband or relative who is accompanying. Always a third party uninterested witness must be kept while handling the case examination. E.g. nurse, compounder, relative, receptionist etc.
- Medical termination of pregnancy (MTP act 1971) - Here the consent of the pregnant woman alone is enough for MTP. However, she should be above the age of 18 years.
- Sexual intercourse in India – intercourse with a consenting woman amounts to the legal offence of rape if she is below the age of 18 years and this is called as statutory rape.
- Medical examination of a survivor of alleged sexual assault to confirm the allegation, the doctor should obtain prior consent observing all formalities. The written informed consent should necessarily be after telling her that the finding of clinical examination shall be revealed in a court of low. Consent must be obtained from her relatives if the victim is a child or minor.
- In every medicolegal case, whether the patient is a victim or an assailant, consent must be obtained. Sometimes, necessary reasonable force may be applied in examination of alleged accused person.
- Consent in criminal cases- If a person has been arrested on the charge of committing some offence, and the police officer believes that his physical examination would reveal important clues regarding the commission of that offence, it is not necessary for the medical officer to obtained his consent.
- Consent in drunkenness & intoxicated cases - As a matter of routine, a medical practitioner should examine with consent. If he/she is unconscious, in that case, the consent of the next of his kin shall be taken.
- In medical negligence charges against a doctor, consent is not valid defense.
- Consent in unconscious victim / assailant / any patient examination finding can be divulged to police after the patient regains consciousness and gives consent for disclosure.

5. CONSENT AND AGE

- **Sec 87 I.P.C. -** A person under age of 18 years cannot give valid consent, whether expressed or implied, to suffer any harm which may result from an act not intended

or not known to. E.g. consent for a wrestling competition.

- **Sec 89 I.P.C. –**The consent of the child under 12 years cannot be a valid consent to cause a harm which might occur as a result of good faith. E.g. consent for an operation. Only a guardian can give such consent for treatment.
- **Under section 375 I.P.C. -** Sexual intercourse by a man with a girl under 15 years of age, even if she be his wife, or any other girl under 18 years of age, even with her consent, constitutes the offence of rape.
- The Transplantation of Human Organs Act, 1994, Donor means any person not less than eighteen years of age, who voluntarily authorizes the removal of any of his or her human organs for therapeutic purposes.
- The minimum age for donating blood as mentioned is eighteen years for blood donor.

6. OTHER IMPORTANT POINTS REGARDING CONSENT

- For compulsory vaccination, consent is provided by the law.
- If any person has donated his eyes to be used for therapeutic purpose after his death, the eyes can be removed only with the consent of guardian or legal heirs.
- For organ transplantation, the organs of the dead person should not be removed without the consent of the guardian or legal heirs.
- Pathological autopsy should not be done without the consent of guardian or legal heirs. Specifying access right/privileges to resources or policy should be done while preserving organ or body parts.
- In medico legal autopsies consent is not required and the doctor can remove from the cadaver anything that is essential for purpose of examination.
- Consent is not a defense in cases of professional negligence.
- The nature of illness of a patient should not be disclosed to any third person without the consent of the patient.

7. SUMMARY AND CONCLUSION

- Consent is very important for any type of treatment or the medical procedure. Consent should always be written which is explained in the language acceptable to the patient and must be an informed type.
- No legal value of blanket consent, so consent should be taken for the specific treatment or the procedure.
- In medico legal examination, consent is must with certain exceptions as already discussed. The consent document should be authorized by doctor taking consent by signing at the bottom of the document.
- A medical practitioner receives legal protection through consent in case of an action for negligence, even if, it is not a defense for professional negligence.

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Case Report

Unusual Autopsy Presentation of Traumatic Asphyxia in Victims of A Road Accident

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Article Info

Key words
Traumatic Asphyxia
Road Accident
Petechiae
Sugarcane

Abstract

Death due to traumatic asphyxia is usually a result of mechanical fixation of chest resulting from accidental compression of victim by heavy weight. The distinctive features usually observed in the victims are of intense cervico-facial cyanosis and edema, sub-conjunctival hemorrhages and petechiae over the face, neck and upper chest. Conversely, lack of these striking features has been observed in occasional victims. Likewise, in this article we present five cases of traumatic asphyxia secondary to road accident with absence of cervico-facial features. These victims were entrapped beneath huge bunch of sugarcane on which they were seated during their journey in the truck.

1. Introduction

The usual relevance of asphyxia in Forensic context is in mechanical or violent asphyxia, rather than some internal condition which is more likely to be result of natural disease or toxic condition.[1] The usual causes of violent asphyxial deaths are hanging, strangulation, throttling, drowning and choking. While in rare instances deaths from traumatic asphyxia have occurred. The term 'traumatic asphyxia' generally means mechanical fixation of chest, which on most occasions results from direct accidental Compression of the body of victim by heavy weight against resisting surface.[2]

Traumatic asphyxia is well recognized entity now and provides the most extreme demonstration of so called 'the classic signs of asphyxia'. It is characterized by the distinctive features such as cervico-facial cyanosis and edema, sub-conjunctival hemorrhage, and cutaneous petechial hemmorrhages of the face,

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neck and upper chest.[3] Nevertheless, these features may not be observed in every case and in occasional victims they are lacking. Here in this article we present five cases of death due to traumatic asphyxia secondary to a road accident with deficient characteristic features.

2. Case report:

Bodies of five victims of a road accident were brought to our Department of Forensic Medicine, Dr. Shankarrao Chavan Government Medical College, Nanded (Maharashtra) for medico-legal autopsy. The detailed history of the road accident was obtained from the police and the survivors of the accident. Accordingly, fifteen persons were travelling to their village and were seated on large bunch of sugarcane loaded in a truck. The truck met with an accident at around 09:00 p.m. as the driver lost his control on an acute turn and the truck turned upside down. Meanwhile, the five of them were trapped beneath the heavy sugarcane bunch. The other persons in the truck jumped outside and escaped from being caught underneath. The entrapped victims could not be rescued for two hours due to darkness of night hours and delay in getting the additional help. Afterwards, the victims were recovered and were declared brought dead in the Casualty Department.

Autopsy findings:

The detailed demographic profile and important autopsy findings of individual case are mentioned in **table no. 01.** Out of these five victims, three were male (20 yrs, 25 yrs & 45 yrs) and two were female (12 yrs & 35 yrs). They were moderately built and nourished and having dark complexion. All the victims had minor external injuries, mostly in the form of scattered linear abrasions.

Table No. 01: Demographic profile and Autopsy findings in Victims of Traumatic Asphyxia

Case no.	Age (in Years)	Sex (M/F)	Complexion	External Autopsy Findings			Internal Autopsy Findings		
				Surface injury	Cervico-facial cyanosis	Petechiae	Internal injury	Petechiae	Congestion & Fluidity of blood
01	35	F	Dark	Scattered linear abrasions	Absent	Nil	Nil	Sub-pleural	Present
02	12	F	Dark	Contusion forehead, Scattered linear abrasions	Absent	Nil	Sub-arachnoid hemorrhage	Sub-pleural & Sub-pericardial	Present
03	20	M	Dark	Scattered linear abrasions	Absent	Small, sub-conjunctival	Nil	Sub-pleural & Sub-pericardial	Present
04	25	M	Dark	Scattered linear abrasions	Absent	Small, sub-conjunctival	Nil	Sub-pleural	Present
05	45	M	Dark	Scattered linear abrasions	Absent	Nil	Nil	Sub-pleural	Present

The majority of linear abrasions were found on facial region. There were no neck injuries and none of the victim had any type of fracture. The typical cervico-facial congestion was not recognized in any of them. The cutaneous petechiae of the face, neck and upper chest region were not obvious; but small sub-conjunctival hemorrhages were evident in two cases (case no. 03 & 04). All these victims had signs of asphyxia such as cyanosis of nail-beds, fluidity of blood, visceral congestion, cerebro-pulmonary edema and petechiae over pleura and pericardium. The internal injury to Head was evident in the form of diffuse subarachnoid hemorrhage in one victim (case no. 02). Others did not showed any type of internal organ injury. Although, the characteristic features were indistinct in these cases, the cause of death in all these victims was determined to be accidental traumatic asphyxia depending upon circumstantial evidence.

3. Discussion:

The classic features of traumatic asphyxia such as cranio-cervical cyanosis, sub-conjunctival hemorrhage, and cerebral vascular engorgement were described for first time by Ollivier in 1837 which were found during autopsy of persons who had been trampled by crowds in Paris. He applied the term 'masque ecchymotic'.[4] Later, Perthes added some other characteristics, such as mental dullness, hyperpyrexia, hemoptysis, tachypnea and 'contusion pneumonia' to the initial description. Other terms used to describe this condition are Ollivier's syndrome, Perthes' symptom complex, compression cyanosis, traumatic cyanosis, cervico-facial static cyanosis and cervico-facial cutaneous asphyxia.[3]

Traumatic asphyxia is a form of mechanical asphyxia in which respiratory movements are prevented by external pressure on chest and/ or abdomen. Various situations in which it arises include entrapment beneath or within motor vehicles, heavy machinery, wedging of the body within a narrow space, and death in large crowds.[3-8] In these circumstances external pressure is mainly exerted on trunk with other parts spared. In the present incident, it occurred due to entrapment of the whole body of victims beneath the bunch of sugarcane secondary to a road accident. The truck is meant to be used for the transportation of goods and not for journey as such. However, Indian people are used to travel in truck along-with goods like in the present instance. Such unsafe and illegal transportation had resulted into surplus and significant mortality in the present incident.

These victims did not demonstrate the striking characteristics of traumatic asphyxia; while slight sub-conjunctival hemorrhages were observed in two cases. The pathophysiology of formation of typical cervico-facial features in traumatic asphyxia has been attributed to thoraco-abdominal compression rather than asphyxia per se.[8] On compression of chest and/ or abdomen, the positive pressure is transmitted to the mediastinum which interferes with the venous return of the blood to the heart by early compression of the thinner and less potent right heart. Along-with continued arterial supply by more powerful left heart, it causes considerable overfilling in the valveless cervico-facial venous system leading to intense congestion. Also, the 'fear response' plays integral role in pathophysiology of traumatic asphyxia. The victim who anticipate trauma tend to take deep breath, close the glottis and brace himself which further increases the intrathoracic pressure.[4] This leads to marked increase in venous and capillary pressure in the cervico-facial region leading to striking congestion and rupture of small vessels resulting in petechiae. The petechiae are predominantly observed in the areas with little

connective tissue support such as conjunctivae and eyelids.[9]

In the present scenario, our victim's died because of traumatic asphyxia; but would not show cervico-facial plethora and petechiae. This can be best explained by an overwhelming crushing force that effectively compresses the left ventricle and arrests further cardiac output, thereby precluding cephalic venous congestion.[9] Also, the victims who experience sudden crushing injury without warning often do not develop the 'fear response' and the cervico-facial signs of traumatic asphyxia.[10] Further, the dark complexion might have obscured the trivial cervico-facial congestion in these victims.

The mortality in traumatic asphyxia is influenced by the severity, nature and duration of the compressive force and the presence of concomitant injuries.[3,5] The inability to timely rescue the entrapped victims beneath heavy load of sugarcane provided ample of time to cause the death. The pattern and distribution of external blunt injuries in these cases were typical, occurred mostly over prominent parts, and were trivial. Most of these injuries were linear abrasions and were caused by the friction with the sugarcanes. The associated internal vital organ injury was evident in only one case in the form of diffuse subarachnoid hemorrhage; however, this allied injury itself is not definitively fatal. Though the distinctive signs of traumatic asphyxia were not obvious; the cause of death in these cases had been certified as traumatic asphyxia which was based on compelling circumstances and the exclusion of other possible causes.

4. Conclusion:

These cases demonstrate that, though the traumatic asphyxia is characterized by distinct cervico-facial features, some occasional victims might be deficient in these features. In such cases the concomitant compression of both sides of heart and lack of development of fear response plays crucial role. Also, dark complexion might have obscured the trivial findings. The public awareness regarding safe transportation, the education of people about safety rules, avoidance of illegal/ unsafe journey and increasing the availability of safe transportation measures are the important useful steps which will definitely reduce mortality due to such accidents.

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Case Report

Common Household Products Can Be Fatal: A Case Report Of Death Due To Shampoo Ingestion.

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Article Info

Key words
Shampoo
Accidental Poisoning
Surfactant
Fatality
Sodium Lauryl Sulphate

Abstract

In our daily routine we use various chemicals for household and body care purpose. One example is shampoo which is viscous liquid used for purpose of washing hairs and it is relatively harmless. The shampoo contains various chemical such as surfactant sodium lauryl sulfate or sodium laureate sulfate, with a co-surfactant, most often coc-amido-propyl betaine in water. Another type of shampoo is anti-lice shampoo, which contains sometimes potentially danger organophosphate chemical compounds in trace amount. Accidental ingestion of such products was common in children but usually it is not dangerous to life. We reported a case of 2 year old child who accidently ingested shampoo at home. Baby was admitted for treatment and died within few hours.

1. Introduction

In India various natural products were used as a hair care preparation since ancient times. With the introduction of western culture in era of colonial government use of different chemicals in body care products had increased. One example is shampoo. Shampoo is a hair care product used primarily for the removal of dandruff, oils, dirt, skin particles, environmental pollution and/or other contaminant particles that gradually build up in hair. Different types of Shampoo which includes routine hair care shampoo, Anti-lice shampoo, medicated anti-dandruff shampoo, animal shampoo etc. are available in the market.

These products are relatively harmless but there are few reported cases of poisoning due to use of anti-lice shampoo.[1]

Contents of shampoo:

Water, detergents, foam boosters, thickeners, conditioning agents, preservatives, modifiers, and special additives. Common primary detergents used in shampoos are ammonium lauryl sulfate, sodium lauryl sulfate, and sodium lauryl ether sulphate.

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Propylene Glycol (PG, Polyethylene Glycol (PEG), and Ethylene Glycol (EG) are all petroleum derivatives that act as solvents, surfactants, and wetting agents. Typical materials include lauramide DE or cocamide DEA as foam booster.[2]

Most common allergens present in order of prevalence are fragrance, cocamidopropyl betaine, methylchloroiso-thiazolinone/methylisothiazolinone, formalde-hyde releasers, propylene glycol, vitamin E, parabens, benzophenones, iodopropynyl butyl-carbamate, and methyldibromoglutaronitrile /phenoxyethanol.[3]

Current anti-dandruff agents primarily have an antimicrobial mode of action, and inhibit growth of Malassezia spp.[4] Animal shampoo as well as some anti-lice shampoo contains pyrethrin as a base contain.[2]

2. CASE REPORT:

2 years old female child was brought by her parents to casualty of government medical college Aurangabad in un-conscious state. Parents gave history of accidental ingestion of shampoo at home 2 to 3 hours back. On clinical examination her pulse was weak and rapid. She was responding to only deep stimuli, pupils sluggishly reacting to light. There was no oozing from mouth or nose. On duty medical officer started treatment but after few hours she succumbed to death. Medical officer sent the body to morgue for medico-legal autopsy.

Autopsy findings:

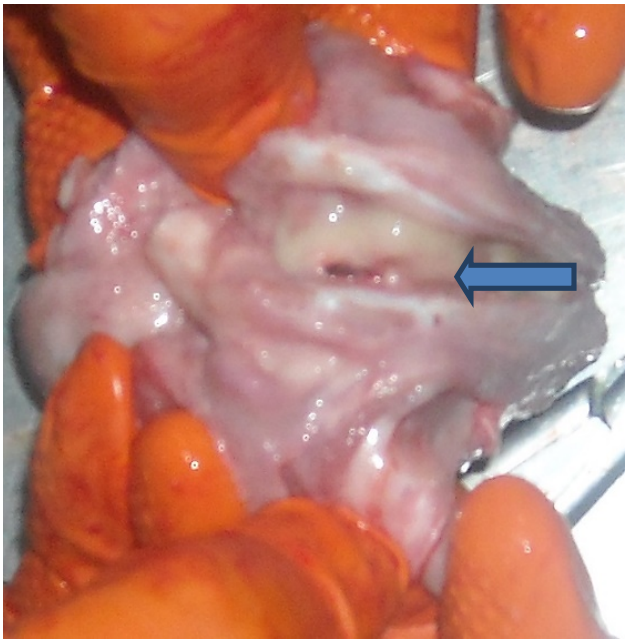
External examination-

The deceased was well built. Rigor mortis w
well-marked and generalized. Post-mortem lividity w
purple, fixed and was present over back. Face was
congested. Nails of fingers showed cyanosis.
There was no oozing from mouth or nostrils.
There were no injuries present over body.

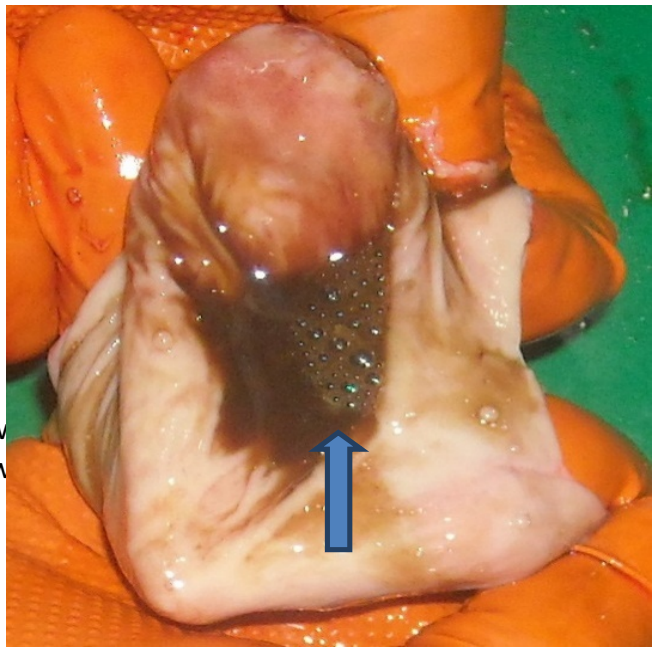
Internal examination-

No injuries were present. Brain was edematous and congested. Larynx, trachea and bronchi showed viscous liquid, congested mucosa and copious, blood tinged froth as shown in **photograph no. 1.**

Photograph no. 1: Copious, whitish & shiny froth along with thick blood tinged mucus



Photograph no. 2: Bubbles seen in the gastric content



Both lungs were congested and edematous. Oesophagus contains copious, blood tinged froth. On opening, stomach showed 150cc whitish viscous fluid admixed with bile and mucus. There were large amount of bubbles present in upper GI Tract as shown in **photograph no. 2.**

All other organs were within normal limits. Viscera was preserved and sent to forensic science laboratory Aurangabad for chemical analysis. Cause of death was given as "asphyxia following aspiration of viscous liquid however samples kept for chemical analysis."

3. Discussion:

Shampoo or other household chemical are generally considered as non-toxic or mildly toxic agent which is intended for external use only to clean the hair, body or to treat certain diseases. In Chan T et al reported poisoning cases due to household chemicals. He noted the percentage of agents involved in poisoning was Dettol liquid (46%), cleaning products (19%), pesticides (14%), and shampoos (10%).[5] This kind of reporting is missing in Indian scenario.

The most common deleterious effects of modern cosmetics are occasional allergic reactions and contact dermatitis.[6]

Brand R et al report a patient with widespread dermatitis caused by contact allergy to Kathon CG and cocamidopropyl betaine in used in shampoo.[7]

Hui Han et al noted in his case report of shampoo ingestion that shampoo led to the osmotic pressure rise in the gastrointestinal tract, which in turn resulted in diarrhea and vomiting. Substantial body fluid loss resulted in hypovolemic shock.[8]

Wax PM et al reported a fatality associated with the inhalational exposure to a pyrethrum shampoo which caused sudden irreversible bronchospasm.[9]

Yair S reported that two children were admitted to the pediatric intensive care unit due to organophosphate acetylcholine esterase inhibitor poisoning after exposure from a home-made shampoo that was used for the treatment of head lice.[10]

Differing from these case reports we noted a death due ingestion of shampoo. Shampoo when rinsed on hair it will produce copious amount of froth with thick bubbles which do not get easily burst and to get rid of them we have to use ample of water. So if anybody ingested the shampoo it will cause thick layer all over esophageal mucosa and when it comes in contact with any other liquid such as gastric lavage fluid or water it produces a thick column of froth. Reasons for such fatality may be aspiration of thick mucus or may be hypovolemic shock due to passive flooding of respiratory tract lumen with fluid as a complication of thick viscous liquid ingestion.

Conclusion:

Common household products like shampoo, medicines, pills and liquids, Cleaning Products and Other Household Chemicals, cosmetics and toiletries when accidentally ingested by children can prove fatal and leave family in great sorrow. Preventive measures have to be followed as- store all such products out of sight and out of reach of children, preferably in a locked cabinet. Even items that seem harmless, such as mouthwash, can be extremely dangerous, if ingested in large quantities by children. Always keep them in their original containers. Never put them on the floors of your home. Use safety latches for all cabinets containing hazardous substances.

Be Prepared

It is wise for parents & other adult family members to learn cardiopulmonary resuscitation (CPR) and the abdominal thrust procedure (the Heimlich maneuver). We

recommend to keep important numbers near the phone (for yourself and caregivers) such as poison-control center number, your child's doctor's number, parents work and cellphone numbers, neighbor's or nearby relative's number. Make a first-aid kit and keep emergency instructions inside it.

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Letter to Editor

Medical Audit: An Aid Towards Improving Quality In Health Care

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To,

The Editor in Chief, JFMSL.

Medical Audit helps to understand the validity of a procedure conducted in the past, which becomes a source of reference for the future and forms known as Medical Audit.

An audit is a cyclical process, which consists of- defining standards, collecting data, identifying areas of improvement, making necessary changes and again back round to defining new standards.

Surgeons and hospitals can accurately report their outcomes with the help of a good clinical audit process as follows:

- Analyse and compare performance indicators and outcomes
- Perform in-depth peer review
- Identify ways to improving care and outcomes
- Lower the cost of providing improved patient care
- Assist in the continuing education of surgeons

Definition:

A medical audit is defined as the evaluations of medical care in retrospect through the analysis of medical records.[1]

"A quality improvement process that seeks to improve patient care and outcomes through a systematic review of care against explicit criteria and the implementation of change.[2]

History :

One of the first-ever clinical audits was conducted by Florence Nightingale during the Crimean War 1853-1855. She and her team of 38 nurses corrected the unsanitary conditions of the hospitals for the soldiers injured in the war.[3] She also kept records of the mortality rates of the soldiers of the hospital. This brought tremendous change to the mortality rates among the soldiers, which changed from 40% to 2%. There have been several attempts to improve patient care and quality of services all around the globe since these concepts have come up, but beyond limit use of audit processes in routine is a matter of concern.[4]

Pre Requisites[5] For Medical Audit:

1. Hospital operational statistics: (a) Hospital resources: Bed compliment, diagnostic and treatment facilities, staff available.

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(*b) Hospital utilization Rates:* Days of care, operations, deliveries, deaths, OPO investigations, laboratory investigations, etc. *(c) Admission Data:* information, on patients i.e. hospital morbidity statistics, the average length of stay (ALS), operation morbidity, outcome of the operation, etc.

2. The procedure of collection and tabulation of hospital statistics should be standardized.

3. The primary source of this data is medical records, hence accurate and complete medical records should be ensured.

4. A Medical Record librarian should be well trained for carrying out quantitative analysis.

5. Hospital planning and research cell should be established at the state level to tabulate and analyze data, with recommendations for improvement.

THE PROCESS OF AUDIT:

The clinical audit process can be described as a cycle or a spiral. Within the cycle, the stages follow the process of-

i. Establishing best practice
ii. Measuring against criteria
iii. Taking action to improve care and Monitoring to sustain improvement.

Each cycle goes to a higher level of quality as the process continues,

There are five stages:

1. Identifying a problem or issue
2. Define criteria and standards
3. Data collection
4. Compare performance with criteria and standards
5. Implementing change.[6]

AUDIT AND FEEDBACK:

Audit and Feedback have got certain similarities, this are-Both can be effective for changing healthcare practices; there is still little evidence about how to use both of these tools most efficiently and without adopting best practices, they would continue to be an unreliable approach for healthcare improvement.[7]

BARRIERS AND FACILITATORS TO EFFECTIVE AUDIT:

There are certain factors that could become barriers to a good audit, like-Lack of resources; Lack of expertise; Organizational impediments; the heterogeneities of the studies in the overall review; the problems of interpreting sub-groups of studies within the larger review; the lack of head-to-head comparisons to answer key questions.[8] The facilitators could include modern medical record systems; effective training; dedicated staff; protected time; structured programs and shared dialogues.

CONDITIONS: STRUCTURE:

- Formal agreement among administration and clinicians on responsibility.
- Medical staff cooperatively accepts responsibility.
- Named consultant to coordinate audit Committee / Group
- Every doctor assigned to a specialty
- Formal groups in charge of drug policy, infection control, PG education, Ethics, Medical records
- Time identified
- Timely DATA
- Clerical support

ATTRIBUTES:

- It aims to improve the quality of medical care
- It compares actual medical practice with agreed standards of practice and standards followed by the analysis of cases of such variations.
- It is formal and systematic.
- It involves peer review.
- It requires the identification of variations between practice and standards followed by the analysis of causes of such variations.
- It provides feedback for those whose records are audited.

- It includes following up or repeating an audit sometime later, to find out if the practice is fulfilling te agreed on standards.

COMMITTEE

A medical audit committee should be comprised of the following professionals from the medical section:

- Director of Medical services
- Heads of Medical Departments (Medicine, Surgery, Obstetrics & Gynaecology, Paediatrics)
- Head of Pathology
- Nursing Superintendent

TYPES OF MEDICAL AUDIT :

- Standards-based audit
- Adverse occurrence screening and critical incident monitoring
- Peer Review
- Patient Surveys and Focus Groups

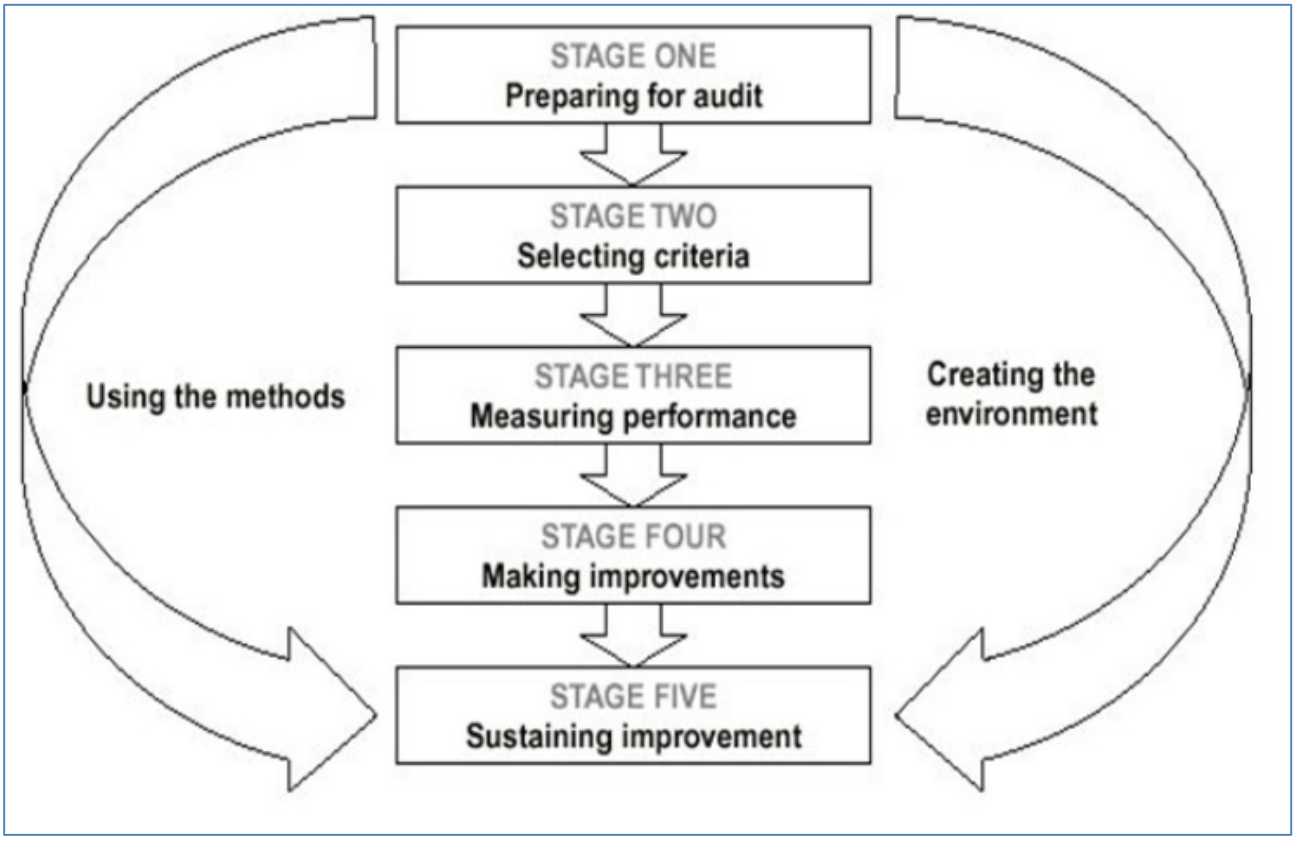
OR

a. Morbidity Audit
b. Mortality Audit
c. On spot Audit
d. Statistical Audit

THE PLACE OF MEDICAL AUDIT IN HEALTH CARE:

Clinical audit is an integral part of clinical governance and it looked like a system for improving clinical practice. Thus clinical audit has been a part of six pillars4 of clinical governance designed by the NHS since 1997, which are-Clinical effective-ness, Research & Development, Openness, Risk, Management, Education & Training, Clinical Audit, etc

Figure No. 01: Pictorial representation of the medical audit process



PRINCIPLES:

1. Medical staff and Health authorities should be familiar with their respective responsibilities for the quality of patient care
2. Medical staff should organize themselves in order to fulfill responsibilities for audit and for taking action to
3. improve clinical performance
4. Each hospital and specialty should agree on a regular program of audit in which doctors in all grades
5. participate
6. The process of an audit should be relevant, objective, quantified, repeatable, and able to effect appropriate
7. change in the organization of the service and clinical practice
8. Required resources should be provided to the Clinicians for medical audit
9. The process and outcome of the medical audit should be Documented
10. The medical audit should be subject to evaluation

METHODOLOGY

1. Criteria Development
2. Selection of Cases with Diagnosis
3. Work Sheet Preparation
4. Case Evaluation
5. Tabulation
6. Report Presentation

A.CRITERIA DEVELOPMENT:

- Choose the diagnosis to be studied: Based on the case load / mortality profile / public health importance etc by committee
- Indications for admission
- Hospital services recommended for optimal care
- Range of length of stay and indications for discharge
- Complications or additional diagnosis

B.WORKSHEET (TOOL) PREPARATION:

- A standard worksheet, A Structured worksheet with YES/NO, NA to be prepared on which pertinent data are taken from records of a patient.
- Variables : (with structured sub-variables)
  - Basic data
  - Indication for admission
  - Initial diagnosis
  - Diagnosis agreement
  - History: each relevant history
  - Physical examination
  - Lab Tests
  - Treatment
  - Nursing care
  - Complications
  - Mortality/ Discharge

C.CASE EVALUATION:

- All members of medical staff regardless of specialty to be involved in the evaluation, a group of five clinicians is considered optimum by Payne
- Admission : appropriate / inappropriate
- Length of stay: appropriate/inappropriate
- Hospital Services: Adequate/ Inadequate
- Comments

4. APPLICATIONS:

- Adequacy and quality of care
- Cesarean cases study and Unnecessary surgery study
- Educational tool
- Evidence-based medicine
- Scientific Approach
- Professionalism

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