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- ## Guidelines for Authors / Contributors

## Journal of Indian Academy of Forensic Medicine

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### From the Editor's Desk

It is a moment of mixed feeling for me while presenting the second number of the Journal. The component of a good feel is because I have already come up with the first number of my tenure as editor. I wish that contents of first number would attract interest of many readers. I shall not hesitate to apologize for delay in presenting the first number for so many "teething problems", probably, which may be common on taking over the role.

However, opposite feel is due to want of a reasonable number of submissions by the learned members. Probably, even learned numbers also face "teething problems" for their contributions as the tenure changes. I hope with two numbers of journals, many friends will have my contact details and will do oblige me by contributions of articles for publication.

Ending with the hope that with our collective efforts, we may be able to remain close to quality and quantity of the journal articles.

**C B. Jani**  
**Editor**

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## **Editorial**

### **Brand endorsement by medical association: Who will hit the “Bull’s Eye”?**

Though ethics in medical profession touch every discipline of medical fraternity, The Medical Council of India has assigned the responsibility on the shoulders of Forensic Medicine discipline to teach the “ Ethics in Medical Profession” to the graduates of medical education and hence it becomes our duty to review the circumstances related there of.

We as a medical fraternity feel proud and fortunate to have constellations of medical associations in India. Among the chunk, Indian Medical Association( IMA) is the oldest and largest guild established in the year 1928 and enjoys the membership of specialists and super specialist even though separate associations of different specialty are also in existence. Even, The Honorable Supreme Court( Civil Appeal No.688 of 1993) in the case of “IMA versus V.P. Shantha & others” had allowed such association to appeal in a subject matter of “Representative” character. Until now the track record of IMA is full of creditable activities like Professional Protection Scheme (PPS), Social Security Scheme(SSS) for members and “ *aao gaon chale* ” project for catering medical services in rural India. Thus, there is no doubt about agility and ability of IMA with reference to its goal and path breaking role.

But unfortunately, recently it is being dragged in a debate of “ *endorsement of fruit juice marketed by a corporate stalwart*”. Probably, this is not the first instance where it seems to have crossed it’s ambit. In the past also, it had endorsed some soap, liquid soap, water purifier systems etc. However, such gesture didn’t create any major hue and cry among various sections of the community then, on getting sidelined in the light of some bigger issues having larger ramifications.

Though there is no second opinion that such activity will make the association more affluent, the first and foremost concern before all of us is “Whether or not such endorsement has a component of conscience.” Can we imagine a future, when different associations start competing each other in the race of endorsement of commercial product? I.e. Ophthalmologists’ association endorses a brand of spectacle/ sunglass, Pediatricians’ body recommends a particular dipper for kids, Gynecologists’ organization hallmarking sanitary tampons/ napkins and what not. Medical profession is still considered as one of the dignified and honored one in India. There is potential apprehension in the mind of many medial and non medical people that such conduct will do taint the grandeur of a reputed profession and association .

Furthermore, whether or not a medical association is competent to endorse any commercial product. As far as the product in question is concerned there is an appropriate authority of ‘Foods and Drugs Control’ and under the circumstances what is the need of encroaching upon the powers and functions of that administrative authority.

Do we have intramural or in-house laboratory where the purity, potency or any other relevant trait of a product can be tested or we casually rely on the results of some extramural laboratory? Participants in a news item of electronic media( 1<sup>st</sup> week of May, 2008) did not hesitate to express that any such gesture by a reputed association do convey wrong signals to many in the society.

Under the clause 6.1 in Chapter 6 of The Indian Medical Council (Professional Conduct, Etiquette and Ethics) Regulations, 2002, such activity by a physician (individually) amount to unethical act .If we are forbidden to indulge in such act in capacity of an individual, How our association can justify undertaking of such task ?

We are in the era of LPG ( Liberalisation, privatisation and globalisation- and not Liquid Petroleum Gas, though earlier may prove equally inflammable as later in coming days) and a reasonable number of medical students are pursuing educations in self-financed institute at a high fee structure. What message we wish to convey to our generations in context of ethics is equally important part of debate. Many eminent persons may agree to the perception that such activity no way conveys some positive signals to our medical generations.

It is high time to deeply think about “ **ethics for medical association**” and to maintain a safe distance from unethical lucrative proposals of deceptive or illusive nature. Our responsibility may not simply end there. If we really claim to uphold the dignity of medical profession as a whole it becomes our pious obligation to the community to stop even commercial advertisement where the “characters of medical man” (not in real life) is shown endorsing items of human amenity.

Many learned members may put forward legal arguments in favour of such act but we must anticipate some admonition or reprimandation from legal or administrative authority in a “ Public Interest litigation” by some activist , incriminating the association of camouflaging activity and even we may be compelled to take a somersault on the issue concerned and also to follow the laid down code of conduct with ashamed face.

Summarily, if we self impose the standards at this juncture, it may not be too late to put on efforts to reinstate a “ Next to god “ image of medical man in the society. If, collectively and independently, we fail to do so, most probably any association can't claim that it may be sculptured with golden letters in the annals of medical profession in India.

**C. B. Jani**

**Editor**

## **Original and Paper**

### **Pattern of histopathological changes of liver in poisoning**

*Seema S. Sutay\* & B. H. Tirpude\*\**

#### **Abstract**

Increasing trend of poisoning in rural as well as urban set up for committing suicides must drive attention of law enforcing agencies to restrict its use and providing better methods for pest control. One of the organs suffered by such poisoning is liver, which is studied in detail in this study with special reference to histopathological finding. Out of total 140 autopsies 78 cases revealed histopathological finding in liver which varies with treatment, duration of survival, death autopsy interval. This may be helpful to conclude cause of death in obscure autopsies or even at each poisoning autopsy where opinion is reserved till viscera report is available. This may cut short time required for court proceeding, insurance claims based on these opinions.

**Key Words:** *Histopathology, Liver, Poisoning, Cause of death*

#### **Introduction**

Today at every center carrying out the medicolegal work, poisoning autopsies form a sizable group and the medical officer is often required to give his opinion in cases of deaths which is a prime concern to the people in general and to law enforcing agencies, social scientist and researchers.

Poisoning is the third leading cause of death following motor vehicle and firearm injury running first and second rank according to international toll causing death rate more than 7.2 per 100,000 populations according to NCHS.<sup>1</sup> According to WHO reports 8 million people in the world consume poison every year. Out of them about 2,20,000 people die. Most of the cases of poisoning occur in the developing countries. About 50, 000 deaths occur in India due to poisoning every year.<sup>2</sup>

In spite of such a sizable number of deaths due to poisoning opinion to cause of

death is reserved till viscera shows evidence of poisoning which takes a long duration for reporting and due to this court proceeding, death certificates, insurance claims of relatives of deceased etc. remain pending.

Death may occur immediately after taking poison or may get delayed for days or weeks together, where the poisoning may not be the actual cause of death, although it may occur as a result of some remote intervening cause. In these cases the determination of exact cause of death may be difficult as external appearance may not give any clue or internal examination may even sometimes does not reveal anything on gross.

On gross examination, all organs are congested, However, Histopathological examination (HPE) can reveal such pathology in major organs like lung, liver, kidney where poison is acted, absorbed and eliminated. N' number of literatures have mentioned poisoning trends and histopathological changes in animal organs only. In rural setup like Sewagram it is very common to see suicidal poisoning by pesticide and almost all are metabolized in liver. Hence in this paper his to pathological examination of liver is performed in the humans who died due to poisoning. This can be very much helpful to assess prognosis of the patient and enhancing prompt treatment, the patient and enhancing prompt treatment, which will include liver enzymes and other liver tonics.

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## Material and Methods

This study was carried out in the Department of Forensic Medicine and Toxicology in collaboration with Department of Pathology, Mahatma Gandhi Institute of Medical Sciences, Sewagram.

Cases with no laboratory confirmation of poisoning and those who had associated illness were excluded from the study. The cases were thoroughly studied using specially designed

Poison	Admitted cases	Expired during Rx	Case fatality rate(%)	Brought dead	Total
Organophosphorous	104 (87.39)	66 (55.46)	63.46	15 (12.61)	119 (19.38)
Organochlorous	17 (65.38)	12 (46.15)	70.59	9 (34.62)	26 (4.23)
Carbamate	02	0	0	0	02 (0.33)
Poi + Alcohol	165 (95.93)	21 (12.21)	12.73	7 (4.93)	172 (28.01)
Ethyl Alcohol	98 (97.93)	3 (2.97)	1.02	3 (2.97)	101 (16.45)
Other Insecticides	100 (99)	3 (2.97)	5	1 (0.99)	101 (16.45)
Unknown	91 (97.35)	3(3.23)	3.31	2(2.15)	93 (15.15)
<b>Total</b>	<b>577 (93.97)</b>	<b>108 (17.59)</b>	<b>18.72</b>	<b>37 (6.03)</b>	<b>614</b>

**Table 1 Mortality Trends** (Figures in parenthesis represent percentage)

Gross finding of liver	OP	OC	Poi+OH	OH	Others	Total
Enlarged	3 (33.33)	1 (11.11)	2 (22.22)	2 (22.22)	1 (11.11)	09 (6.42)
Reduced	3 (50)	0	1 (16.66)	1 (16.66)	1 (16.66)	06 (4.28)
Congested	75 (63.0)	19 (15.96)	20 (16.80)	4 (3.36)	1 (0.84)	119 (85)
Pale	5 (71.4)	2 (28.57)	0	0	0	07 (5)
greasy	1 (33.33)	0	2 (66.66)	0	0	3 (2.14)

**Table 2 Gross examination findings of liver in poisoning**

This was a prospective study of 2 years' duration from June 2003 to June 2005. All the autopsies with the history of poisoning were studied. The cases confirmed for poisoning based on the toxicological reports were included in the

proforma that included- Demographic profile of the deceased.

1. Complete history related to poisoning obtained from police, relatives or hospital records.

2. Thorough external and internal post mortem examination was performed and recorded.

Each autopsy was treated as a special research project. Special morphological examinations of the viscera were routinely performed. Particular attention was also given to study of respiratory and cardiovascular

## Poison analysis

Analysis of gastric contents, urine and blood was done in toxicology laboratory in the Department of Forensic Medicine and Toxicology by high performance thin layer chromatography (camag).

Group	FCL	Cong	CLN	AH	SDL	Total
OP	15 (34.88)	20 (46.51)	4 (9.30)	1 (2.33)	3 (6.98)	43 (55.13)
OC	4 (36.36)	5 (45.45)	0	1 (9.09)	1 (9.09)	11 (14.10)
Poi+OH	6 (35.29)	9 (52.94)	2 (11.76)	0	0	17 (21.79)
OH	1 (33.33)	0	0	2 (66.67)	0	3 (3.85)
Other	1 (25)	2 (50)	0	1 (25)	0	4 (5.13)
<b>Total</b>	<b>27 (34.62)</b>	<b>36 (46.15)</b>	<b>6 (7.69)</b>	<b>5 (6.41)</b>	<b>4 (5.13)</b>	<b>78 (55.71)</b>

**Table-3 Histopathological changes in liver**

(Figures in parenthesis represent percentage)

{FCL= fatty changes in liver, Cong= Congestion, CLN= Centrilobular necrosis in liver, AH= Alcoholic hepatitis, SDL= Sinusoidal dilatation in liver, OP = Organo Phosphorous, OC = Oragano Chlorine, Poi = Poison, OH = Alcohol }

HPE finding	Duration of Survival(Hours)					Total
	0-12	13-24	25-48	49-72	>72	
FCL	12	08	0	3	4	27(34.62)
Cong	17	03	04	2	10	36(46.15)
CLN	1	1	1	0	3	6(7.69)
AH	1	1	2	0	1	5(6.41)
SDL	2	0	1	0	1	4(5.13)
<b>Total</b>	<b>33(42.3)</b>	<b>13(16.67)</b>	<b>8(10.26)</b>	<b>5(6.41)</b>	<b>19(24.36)</b>	<b>78(55.71)</b>

**Table -4 Association of duration of survival and Histopathological changes**

(Figures in parenthesis represent percentage)

structures. Every attempt was made to shorten interval between and analysis in order to reduce the problem of postmortem tissue autolysis, which occurs at greatly increased rates in poisoning and sometimes results in difficult and misleading interpretation.

## Histopathological investigations:

The histopathological study of heart, brain, liver, lung, kidney, spleen of all subjects was carried out under the guidance of Histopathologist of MGIMS Sewagram.



## Observations

During the period from April 2003 to July 2005, Total 614 cases of poisoning were reported. Out of them 577 cases were admitted to Kasturba hospital, Sewagram with history of some kind of poison and 108 cases died during treatment. Out

different from the study by Dakhankar<sup>4</sup> where case fatality rate of Zinc Phosphide is maximum i.e. 33.3% followed by 27.9% in OPP and 21.58% in OCP. While Aggarwal<sup>5</sup> et al found 38.21% CFR in Aluminium Phosphide poisoning and 25.20% in Sulphos poisoning.

HPE finding	Death autopsy interval		
	<12(Hours)	>12(Hours)	Total (140)
	78(55.7 )	62(44.2 )	
FCL	13(32.5)	14(36.84 )	27( 34.6)
Cong	19(24.33)	17( 44.73)	36( 46.15)
CLN	3( 7.5)	3(7.89 )	6(7.69 )
AH	3( 7.5)	2( 5.26)	5( 6.41)
SDL	2(5 )	2( 5.26)	1(1.28 )
Total	40( 51.28)	38( 61.29)	78 (100)

**Table . 5 Showing association of HPE of liver and death autopsy interval**

of them we have studied 140 cases in the present study which had shown definite poison in toxicology report. Those, which did not detect any poison, were excluded from the study. Also those cases which were associated with some illness (5 cases) were excluded from the study.

## Results & Discussion

### Mortality trend

As Shown in Table No. 1, out of total 614 cases 577(93.97%) cases were admitted to Kasturba Hospital during the period from June 2003 to July 2005. We studied total 140 cases in this Research in which 108 cases expired during treatment and 37 cases were directly brought for postmortem examination. 5 cases were excluded from the study which showed associated illnesses like sickle cell disease, some cardiac disease, etc.

Amongst total 614 cases were admitted in hospital, 108(17.59%) expired during treatment. Organophosphorous poisoning constitute the maximum No. either alone (19.38%) or combined with alcohol with cases fatality rate as 63.46% . Ethyl alcohol poisoning and other insecticides are higher in incidence i. e. 16.45% and 28.01% respectively. However case fatality rate is maximum in Organochlorous poisoning. Similarly Zine<sup>3</sup> et al found the 44.82% CFR in OPP and 37.93% CFR in Alcohol poisoning Which is

Because of easy availability in such rural area and better efficacy against plant insects, OP & OC are widespread in use. They are as fatal to human as to plant insects. In spite of admission to hospital such fatality explains the notoriety of OP & OC poisons in this area. No cases of Alluminium phosphide or Sulphos poisoning is reported in our study.

Amongst them total 78(55.71%) involved liver which were studied in detail.

### Manner of Death

We found maximum cases as suicidal i.e. 125(89.29%), Accidental [13(9.29%)] and 1.43% unknown as per history and information from Police. This is similar with finding of Zine<sup>3</sup> et al (49%), Dakhankar<sup>4</sup> et al, Naik <sup>7</sup> et al (53.95%) where Suicidal poisoning is more common.

In Suicidal poisoning the Histopathological findings obtained are maximum because dose taken in suicidal poisoning is as high as to cause death of persons.

### Signs and symptoms in poisoning

Out of total 140 cases, 87% cases presented with vomiting, 85% with pain in abdomen, 72.14% with convulsions and 85% had respiratory distress at end stage. while on postmortem examination 66.43 cases revealed froth and 94.29 had cyanosis at fingernails.

All cases of poisoning were presented with above symptoms in more or less same proportions. These signs and symptoms are in agreement with authors Karalliede<sup>8</sup> et al, Pillay<sup>9</sup>.

Reddy<sup>10</sup>, Knight<sup>11</sup>, Modi, et al. Also external examination finding by Dalal<sup>12</sup> et al shows that 53.01% cases had cyanosis at fingernails and 25.15% at lips. Froth from mouth and nose was observed in 70% cases. As shown in Table No. 2 On gross examination, 6.42% cases had enlarged liver while 4.28% had shown reduced size. 85% were congested and 5% were pale on cut section. 2.14% cases had greasy feel.

#### **Histopathological changes in liver**

As shown in Table No 3, Out of total 78(55.71%) cases affecting liver organophosphorous constitute 43(55.13%) and cause fatty changes in 15(34.88%); congestion in 20(46.51%); centrilobular necrosis in 4(9.30%); and alcoholic hepatitis in 1(2.33%) and Sinusoidal dilatation in 3(6.98%). Organochlorous group affected liver in 11(14.10%) and revealed microscopic findings as fatty changes in 4(36.36%); congestion in 5(45.45%); alcoholic hepatitis in 1 and Sinusoidal dilatation in 1(9.09%). Poisons in alcoholic intoxication [17(21.79%)] showed fatty changes in 6(35.29%); congestion in 9 (52.94%); centrilobular necrosis in 2(11.76%) cases. Purely Alcoholic intoxication affected liver in 3 (3.85%) and showed fatty changes in 1(33.33%); and alcoholic hepatitis in-2(66.67%). Other poisons [4(5.13%)] revealed fatty changes in 1(25%); congestion in 2(50%); and alcoholic hepatitis in-1(25%).

Dalal<sup>11</sup> et al in OPP, Cyriac job<sup>13</sup> in Alcohol and Arora<sup>14</sup> et al in Aluminium phosphide poisoning are in agreement with fatty changes in liver contributing death of patients.

S. Sriramachari<sup>15</sup> in MIC & HCN poisoning showed hepatic cord cell necrosis.

Sabina<sup>16</sup> et al in Malathion intoxication to rats noticed parenchymatous degeneration in 80% of animal and El elaimy<sup>17</sup> et al in OPP showed focal degeneration of cytoplasm in OPP. No other authors have mentioned the findings quantitatively.

#### **Duration of Survival**

As shown in Table No 4, out of total 78 (55.71%) cases of poisoning affecting liver 33 cases (42.31%) survived less than 12 hours.

Maximum cases i.e. 12 (36.36%) showed fatty change in liver and 17 (51.52%) showed congestion in liver.

#### **Death Autopsy Interval (DAI)**

As per Table-5; total 78(55.71%) had less than 12 hours death autopsy interval. Out of them 40(51.28%) affected liver and out of total 62 (44.28%) which had more than 12 hours interval. 38(61.29%) cases had shown changes in liver.

There is no significant difference found in the cases (78) studied in less than 12 hours of death and cases studied(62) more than 12 hours of death. All possible Histopathological findings of poisons are shown in table as per death autopsy interval.

Although, We shortened interval between preservation and analysis as less as possible to prevent autolytic changes. However, in some cases of brought dead where time elapsed most, have shown changes in organs. Although maximum [103(17.59%)] autopsies are done on dead bodies who were admitted to Kasturba hospital and died during treatment, thus reduced the death autopsy interval, it is seen that histopathological examination has revealed much of changes.

#### **Summary and conclusion**

1. In the present study, the mortality due to poisoning is more common in Insecticides than too in OP i.e. 70.59% with cases fatality rate of 63.46% followed by Organochlorous and insecticides taken either in intoxicated state or with adulterated alcohol.
2. The most common Age group affected by poisoning was 21-40 years, which committed suicides.
3. Duration of survival was least in OPP (58.77%) i.e. less than 12 hours followed by Organochlorous and alcohol poisoning. The histopathological examination findings in major organs affected by pesticides were obtained maximum amongst the cases, which survived less than 12 hours and next commonly in more than 72 hours. Thus meaning thereby that either the poison was severely toxic to cause death of victim or it has remained in the body for longer duration injuring the internal organs.

4. However we studied association of death autopsy interval and effect of treatment with the histopathological changes in liver. From this we conclude that as the maximum cases were hospitalized initially and hence death autopsy interval was not lengthened more than 24 hours and received emergency treatment in 75% cases. Yet significant histopathological changes in organs show that there is no effect of duration between death and autopsy.
5. Out of total 78 (55.71%) cases affecting liver, Organophosphorous poisoning caused fatty changes in 34.62% cases. Alcohol poisoning caused death by Alcoholic hepatitis in 5 cases. Cases of Centrilobular necrosis and sinusoidal dilatation have also been observed in our study.

Thus, at last we conclude that HPE can support to estimate cause of death in death due poisoning while viscera report is awaited and can cut short the legal proceeding which used to remain pending for evidence of poison in laboratory.

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## **Original and Paper**

### **Rape : Its medicolegal and social aspect**

*U.B. RoyChowdhury\*, T.K Bose\*\*, & R. Prasad\*\*\**

#### **Abstract:**

A retrospective study of medicolegal and social aspect of victims of rape was conducted at the Upgraded Department of Forensic and State Medicine, Medical College, Kolkata for a period 2005-2007 . 37% of the victim girls were found to be 16-20 yrs of age, 77% were from poor family, 45% were found to be illiterate, 72.5% showed recent tear of hymen.

**Key Words :** *Rape ,Victim*

#### **Introduction**

Rape has been treated through history with silence . People find it difficult to talk about and the police and legal system find it equally difficult to deal with . Professionals often avoid rape cases because at the paraphernalia of the judiciary system .

Sexuality is a topic which is not to be disclosed about openly in modern Indian society. Much attention has been given to the changing role of women in our society in areas such as equality in employment and in the family .Much less attention has been given to the fundamental way in which the rights of women are violated through sexual assault. Females in our society are more restricted in their sexual activity than are males. Their sexual behavior is more subject to surveillance. Before marriage, they are expected to abstain from sex .They are banned from any extramarital relationship. Their sexual behaviour, depending on the age , is under the surveillance of their parents or husband, and more generally of the community. This norm exists against them in rape cases also.

From prehistoric times, rape has played a conscious process of intimidation by which men

keep women in fear<sup>1</sup> . There is no doubt that in our society males have more power and status than females. It has been suggested that men's possession of greater power contributes to the rape of women .

The area covered by the present study is mostly North and Central Kolkata having a cosmopolitan population with low socioeconomic strata.

#### **Materials and Methods**

A retrospective study was carried out from the record of rape victims which had been brought for examination in the Dept. of Forensic and State medicine, Medical College, Kolkata. The area that has been covered is within the jurisdiction of Kolkata Police Morgue. This also includes 8 cases which have been referred from the different districts of W.B .

The study was conducted from January 2005 to December 2007 . The history was supplied by the police and as narrated by the victims during the examination . The cases where history was incomplete were discarded from the perview of the present study . Total 80 cases which fulfilled the above criteria were studied, entered in a proforma prepared for the purpose, critically analyzed and were discussed .

#### **Observation**

Out of the total 80 cases studied 30 cases (37.5%) belonged to the age group of 16-20year closely followed by 28 cases (35%)

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belonging to the age group of 10-15 year . Only 2 cases (2.5%) were above 30 years of age. [Table-1]

While considering the socio-economic status of the victims, whereas 62 cases (77.5%) came from poor family only 6 cases (7.3%) were from upper middle class and rich Family. [Table-2]

Considering the educational status of victim 36 cases (45%) were illiterate, 34 cases(42.5%) received primary education, 8 cases (10%) had high school level education and only 2 victims (2.5%)were found to be graduate . [Table-3]

Regarding the residence of the victim 52 cases (65%) were from urban area and 28 cases (35%) were from rural setting .

Religion wise, Hindus were found to be more affected having 46 cases (57%) .

Maximum number of cases (22.5%) occurred in the month of April and least number (2.5%each) both in October and November. 86% were found to be unmarried among the 80 cases of rape victim studied. 42 cases (52.5%) were a dependant member of the family and 8 cases (10%) were housewives .

Regarding the place of incidence 62 cases (77.5 %) occurred outside home and 18 cases (22.5%) in the home of the victim girl. Here was a single offender in 78% of cases. In one case number of accused person were 3 .

In 64 cases (80%) the offender was previously known to the victim . In one case the father of the victim girl was the offender .

Age of menarche was studied among the victim girls. In 25% of cases menarche occurred in 12years followed by 20% of cases in 13 years, [Table-4]

In 58 cases (72.59%) there was evidence of recent tear of hymen. 8 cases (10%) showed old healed tear and intact hymen was noted in 14 cases(17.5%) 4 cases (5%) showed genital injury other than rupture of the hymen. Clinically venereal disease was apparent in 8 (10%) .

## Discussion

The more involvement of adolescent age group can be explained by exploitation of the

**Table-1**  
**Age Distribution of Victim Girls**

Age	No. of Cases
0-5 yr	2
6-10 y	8
11-15 yr	28
16-20 yr	30
21-25 yr	6
26-30 yr	2
>30 yr	2
Not Mentioned	2

**Table-2**  
**Socio - Economic Status**

Class	No. of Cases
Rich	6
Middle class	2
Low Middle Class	10
Poor	62

**Table-3**  
**Educational Status**

Status	No of Cases
Illiterate	36
Primary	34
Secondary	8
Graduate	2
Professional	0

**Table-4**  
**Age of Menarche**

Age	No. of Cases
10yrs	6
11yrs	6
12yrs	20
13yrs	16
14yrs	6
15yrs	3
16yrs	2
Can't recall	9
Not started yet	12

younger girls by the opposite sex coupled with inquisitiveness, less maturity and less resistance on the part of the victim .

Maximum number of victims from low socio-economic status (77.5%) is more due to the poor localities covered under the present study than due to any other factor although the fact that young girls from poor families are more sexually harassed cannot be denied. Similarly poor educational background is intimately related with poor socio-economic status. This is in accordance with the study by Karmakar (1986)<sup>2</sup> where 42.8% were from poor families. Number of urban victims dominated those from rural background (65%). This closely resembles the article appeared in Hindustan Times (1997)<sup>3</sup>.

Religion wise Hindus outnumbered Muslims. This can be explained by the Hindu predominating areas which were under study.

The greater involvement of unmarried victims (86%) depicts the typical characteristic of developing countries where the girl children are oppressed right from their birth both inside and outside their families. This observation supports the study made by Burnam MA et al (1988)<sup>4</sup>.

Only in 22.5% cases the incidence occurred within the home of the victim girls. This is in sharp contrast to the study by Koss MP (1980)<sup>5</sup> who found 48% of the cases occurred within the home and its immediate surroundings. 80% of the offenders were found to be previously known to the victim. It closely resembles the observation by Ressler R.K (1980)<sup>6</sup> who found 78% of the rapists were known to the victim. In 25% of cases menarche occurred at 12 years.

The average age of menarche of Indian girls was found to be exactly the same [7]. Nubile virgins were more in number as a victim of sexual assault as fresh tear of the hymen was observed in 72.5% of cases. This is in accordance with the data provided by George Mason University (2005)<sup>8</sup>.

## Conclusion

Rape leaves a permanent scar on the mind and body of the victim. Child victims suffer the greatest. Not only the victims but also her entire family is put to shame and humiliation. Victims of rape happen to be of different age group but children, adolescents and young women constitute the main target group. The biggest threat comes not from strangers but from known person, near relatives, friends and neighbors.

Legal assistance will be of great help to the victims if it comes on time. Rape victims are in dire need of support by Govt. and NGOs in the form of counselling and rehabilitative measure.

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## **Case Report**

### **Postmortem Burns-An artefact due to transportation**

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#### **Abstract**

An artefact is any change caused or feature introduced in a body after death (accidentally or physiologically unrelated finding to the natural state of the body) that is likely to lead to misinterpretation of medico legally significant ante mortem findings. Artefacts due to burns are usually attributed to prolonged exposure of flame (in cases of death due to burns), Or else due to attempts made to burn a body after homicide with the object of concealing the crime. Post mortem artefact due to burns in the present case, its implication and proposed mechanism are discussed in detail due to rarity of its kind.

**Key words:** *Post-mortem burns, Artefact, Second inquest panchnama*

#### **Introduction**

An artefact is any change caused or feature introduced in a body after death (accidentally or physiologically unrelated finding to the natural state of the body) that is likely to lead to misinterpretation of medico legally significant ante mortem findings<sup>1</sup>.

Determination of the cause of death following autopsy is an interpretative and intelligent procedure, and depends upon sound evaluation of all data, circumstances surrounding the death, morphological evidence of injury and additional laboratory investigations. Contribution of Forensic Pathologist in an investigation of death is proportionate to the knowledge about relevant aspects of such investigation. A scientifically interpreted and documented opinion of autopsy surgeon has helped many investigations to be accomplished with fruitful outcomes. However, at instances this has potential risk of non-deliberate misguiding the investigating agency at any stage, if there is inadequate scientific observation and interpretation. Much of the controversy surrounding the assassination President John F. Kennedy is based on misinterpretation of the wound in the front of his neck as an entrance bullet wound<sup>2</sup>.

Post mortem burns involving face, scalp hair and collar part of shirt observed in a case of death of a male aged 55 years, was attributed to "Spontaneous Ignition" caused by release of inflammable gases (phosphine, diphosphine are released in case of Aluminum Phosphide) coupled with high temperature at the site of recovery of the body<sup>3</sup>.

#### **Case History**

In December 2004, a dead body of an identified female aged about 21 years was referred from a rural hospital located about 50 Km to the Department of Forensic Medicine, PDU Medical College, Rajkot for the post-mortem examination. The police papers narrated that body was recovered from the well in an advanced state of decomposition. On external examination we found that the body and clothes were having the evidences of post-mortem burns, which were not mentioned in the inquest report. When we enquired the investigative officer about this gross discrepancy in inquest and burns present over the body, we came across an interesting but rare history of the circumstances of death. As per history given by the investigative officer and relatives of the victim, the burns were unfortunately produced during the transportation of the body. Relatives ignited a bunch of incense-sticks (*Agarbatti*) in the truck by the side of the body to avoid the foul smell of decomposition. This led to accidental burning of dry grass placed in the same truck (on which body was lying),

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consequently leading to post-mortem burning of the body. To avoid any gross discrepancy between post-mortem findings and inquest panchnama and with the intention of accurate documentation, investigative officer was asked to prepare a second inquest panchnama.

### **Post-Mortem Examination**

The body was in a state of decomposition emitting foul smell. Whole body was distended with gases of decomposition consistent with time since death between 2-4 days. Burns of dermo-epidermal degree were present over 35% of body surface involving elbows, forearms, palms and both lower limbs except buttocks. Clothes and ornaments in vicinity of burnt body parts also showed blackening due to burns. Conventional features of ante mortem burns were absent, indicating the nature of burns as post mortem. All the viscera were comparatively soft and in a state of advanced decomposition, but identifiable. The chemical analysis of viscera excluded any poisoning (including Aluminium Phosphide). Diatom test of sternum bone indicated presence of diatoms similar to that of water sample from the site of recovery of body. Absence of any ante mortem injury, negative chemical analysis and positive diatom test were considered to conclude the cause of death as drowning. The presence of burns of post mortem nature was very much consistent with the history of accidental burns due to burning incense sticks during the process of transportation.

### **Discussion**

Since the 17<sup>th</sup> century it has been well recognized that the human body can be partially or almost completely burnt away and the surrounding environment shows little evidence of burning. Although this phenomenon usually seen indoors, it can rarely occur in an outdoor setting<sup>4</sup>.

Lighting of "diya", incense sticks, "dhup" (*loban*) near dead body awaiting final rituals are part and parcel of religious customs, mainly in Hindus. However, no case of accidental burns of such dead body following such custom has been reported yet. Probably, the present case is a different one, as the dead body exposed to flame of incense sticks, was in a state of decomposition.

Evolutions of gases during the process of decomposition mainly and broadly include Carbon Dioxide, Hydrogen Sulphide, Methane and Mercaptane. Out of the list, Hydrogen Sulphide is considered inflammable<sup>1</sup>. We can safely propose the mechanism of post mortem burns of the present case, that is due to release of inflammable gas in a decomposing dead body and catching of flame by burning incense stick lying in the close vicinity of the dead body.

Post mortem thermal artefacts often seen in fire victims include fracture of skull and epidural hemorrhage due to intracranially generated steam, fracture of the extremities due to thermal contractions of tendons, and wide splitting of skin and muscles, simulating lacerations, cuts and stab wounds<sup>2</sup>. Majority of the literature has reported thermal artefacts in case of prolonged exposure to flame even after death of victim due to fire. The uniqueness of the present case is, the dead was not a fire victim during life but died due to drowning and affected by the post mortem burns caused during transportation.

In the present case, the investigating officer was asked to prepare a second inquest panchnama, as the post mortem burns found at autopsy were not present on the body at the time of preparing panchnama. Thus, two inquest panchnama (before and after transportation of dead body) and autopsy report clearly shows that post mortem burns were caused during transportation. Hence, we are of the opinion that autopsy surgeon must undertake careful examination of dead body brought from some distance especially with reference to artefacts caused by transportation. A scientific correlation of any such finding with mode and environment of transportation shall be thought of before incorporating such findings to the ingredients of the offence.

### **Conclusion:**

- Adequate scientific examination and interpretation during autopsy enables autopsy surgeon to differentiate post mortem artefact from other entities. Its correlation with environmental factors i.e. mode of transportation, religious customs etc helps to minimize or exclude suspicion of foul play.



- Police personnel shall be educated and trained in context of safe transportation of dead body for post mortem examination. No artificial means shall be adopted to avoid foul smell etc, as they have potential chance of alteration in appearance of dead body before post mortem examination.
- Even after due care and precaution while handling the dead body, unfortunately some alteration on the dead body occurs, it is safe to suggest second inquest panchnama so as to address any future discrepancies.

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## Case Report

### Dyadic Diwali

*Sanjay Gupta\* & Hitesh Vaishnav\*\**

#### Abstract

The festival of Diwali is the symbol of victory of good over evil, hope over despair and prosperity over misery although this sounds very echoic, but there are some less privileged people in our society for whom Diwali brings jealousy, envy, feeling of insufficiency, frustration and even death. We received a case on the day of Diwali involving Homicide-Suicide (Dyadic death). Dyadic aspects of Diwali (for that matter any other festival as well) are highlighted in the present article in the light of the case.

**Key words:** *Diwali, Dyadic, Homicide-Suicide, Drowning, Forensic Sociology*

#### Introduction

Diwali is a festival of joy, happiness and lights. People of all caste and creeds enjoy and celebrate the Diwali. According to Hindu Mythology it is victory of truth upon evil<sup>1</sup>. But on other hand, Diwali raises dispute in families either related to economical status in society, as celebration of festival do need additional funds to buy some materials and sweets. On the occasion of Diwali people burst firecrackers, buy new clothes, enjoy sumptuous sweets and so on as the family budget may permit. Sometimes if a family experience constraints of funds, dispute, difference of opinion and domestic quarrels among family members may invite adverse consequences of ending life<sup>2</sup>.

Dyadic death is one of the most tragic forms of inter family violence and associated with family disruption, psychological trauma and financial crisis.<sup>3</sup>

Dyadic death is defined as a lethal event in which an individual kills another and subsequently commits suicide immediately or with in short period.<sup>4</sup>

Homicide-Suicide deaths, though rare, are universal phenomenon reported from all over the world. They have been reported from China<sup>3</sup>,

Florida<sup>5</sup>, Australia<sup>6</sup>, Cleveland<sup>7</sup>, Finland<sup>8</sup>, Hampshire<sup>9</sup>, Central Virginia<sup>10</sup>, Paris<sup>11</sup>, Chicago<sup>12</sup>, Yorkshire and Humberside<sup>13</sup>, England and Wales<sup>14</sup>, and India<sup>15</sup>. The striking common feature in all such deaths is a family relationship or close bond between the perpetrator and victim/s. Rosenbaum had described in his study that most investigations of Homicide-Suicide are done by police, coroners of the court, and there is little or no input from psychiatric and other medical personnel.<sup>16</sup>

#### Case history

Dead bodies of four people were submitted for autopsy at Department of Forensic Medicine at Pramukh Swami Medical College, Karamsad, Dist.Anand on dated 09-11-2007 (the day of Diwali). All four dead bodies belonged to a nuclear family comprising of five members from lower socioeconomic class involved in occupation as labor due to illiteracy. The alleged history given by police (Statement of surviving wife) revealed that family members returning to home after offering prayers at temple were pushed into a canal by the family head himself. Some financial issue over Diwali celebration raised a dispute between the husband and wife while way back home. As husband was already suffering from joblessness, he very easily became agitated, frustrated and angry and he threw all three children and his wife in a canal nearby and ultimately committed suicide by submerging himself as well at the same place. The wife, however survived as she clinged on the

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## Observations

**Table: 1 Details of family**

Age	Sex	The relationship of the perpetrator to the victims	Fate
35 years	Male	Self	Died
30 years	Female	Wife	Survived
6 years	Female	Daughter	Died
3 years	Male	Son	Died
8 month	Female	Daughter	Died

canal's wall. Even though all four dead bodies were fresh and showed postmortem findings of ante mortem drowning, sternum in all cases were preserved for comparative diatom test (diatoms recovered from the sternum bone were matched with water sample taken from canal), the analysis of which helped in concluding cause of death as drowning.

## Discussion

India is large country with diversity on many fronts. Its economic diversity includes a large section of society which we categorise as poor. These are the people who have a long and baffling struggle in order to survive. Besides economic disability these people have to face and overcome agitation, anger, frustration, depression and social evils.

In this case report head of family (male) threw all family members in a canal (Homicide) and then committed suicide by drowning. Socioeconomic factors like poverty, lack of education, lack of awareness about available resources and joblessness and psychological factors like domestic quarrel, frustration, agitation and anger were responsible for this dyadic death.

Gupta et al<sup>15</sup> has reported that incidence of dyadic death in particular region ranges from 1.96 to 7.96% during the space of 5 years. The present study shows incidence 3.33% of dyadic death out of all homicide cases, which fall within the range observed by Gupta et al<sup>15</sup>.

The feature of relationship between perpetrator and victim/s was almost similar in the present case as well as other Indian reports.<sup>4,15,17</sup> That is to say either they are family members or

closely related member of families, however this feature showed a variation in form of line in relationship (without a social sanction ?) in developed countries like Australia.<sup>13</sup>

The method of killing in the present case was similar to observed by Gupta et al<sup>15</sup> that is death by drowning. But was not similar to the method of killing reported by Travis et al<sup>18</sup>, who observed a significant incidence of homicide method by shooting (16%), strangulation (36%), smothering (14%) and stabbing (14%). Though their study reveals drowning as a method of killing, it comprises only 2%.

Dalal et al<sup>1</sup> have reported accidental explosion injuries leading to death of six people involved in manufacturing firecrackers and untoward incident indirectly related to Diwali celebration. The present case is different from others on the aspect of etiology of dyadic death. None of previous reported cases had a background of festival and festival related domestic dispute. In the present case, probably the head of the family lost his patience under stress of satisfying the economical needs of his family members for celebration of one of the most important festival of Hindu mythology. Though in India the nature of celebration of festival is uniform and similar in a particular area or locality (fortunately or unfortunately human habitats are also as per economical status and or other parameters), the enthusiastic reporting of celebration of such festival by rich people in electronic media do create a sense of flaw and jealousy in the category of less privileged class (media is always eager to report the way celebrities of different field celebrate festivals like Diwali, Holi etc.).

In India usually the perpetrator is charged under S.302 of Indian penal code for homicide and such case fall under category of "trial before a court of sessions". The investigating officer, on completion of investigation files for " abatement summary" under S. 173 of Cr. P. C. to the court and court orders the case to be closed. Thus other than legal formalities of abatement of the sessions case, other issues which has potential to emerge out during trial does not subsist. Subsequently such cases are left on the mercy of no body. A multidisciplinary approach by a team comprising of psychologist, psychiatrist and social organizations deserves attraction to study and evaluate the parameters of social, educational, economical and religious background.

We are of the opinion that such deaths are preventable or at least can be minimized by gestures by NGO's and other agencies by educating a particular class of society. The suggestion is an ideal one, which is very easy to express but quite difficult to follow and implement.

Under the circumstances we would not hesitate to coin a term "POOL CELEBRATION OF FESTIVAL". Though this term in medical literature is found to be almost negligible, but if we look back into the history, it was *Balganga Dhar Tilak*, popularly known as *LOK MANYA TILAK* who can be awarded all and full credit of "SARVAGANIC GANESHOTTASAV" (celebration by a committee at a locality with variable voluntary contribution) celebrated in the state of Maharashtra mainly and in small scale in other state of India, reflect the similar spirit. We suggest that such pool celebration on other festivals like Holi, Diwali, Kite flying etc. may help to address such extra medical factors prevailing in deprived class of society and can be an effective remedy for such preventable deaths.

### **Summary and conclusion**

It has been made very clear by Hon'ble Supreme Court that right to life guaranteed Article 21 of the Constitution should be taken to mean right to life with human dignity, free from exploitation. The circumstances in form of etiological factors doe not involve any exploitation but do appreciate the human instinct of dignity.

The unfavorable social and economical circumstances in a class of society do shake the component of dignity on festive occasions. As the administrative set up in the country fails to address such issue, it shall be taken as moral task of the forensic fraternity to participate in a multidisciplinary approach and help the people by concentrating on "**Forensic Sociology**", meaning thereby contributing in social aspects perceived during the role as Forensic expert.

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## **Case Report**

### **Sudden death due to aortic rupture while swimming - A case report**

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#### **Abstract**

An eleven year old, healthy boy with no past history of illness suddenly felt acute excruciating chest pain which was radiating to back, while he was swimming in a private swimming pool. He was immediately transferred to a hospital where he was declared dead on arrival. Autopsy and histopathological findings were suggestive of death was due to extensive advential haemorrhage due to inherent weakness in aortic wall.

**Key words:** *Swimming pool, Advential haemorrhage, Cystic medionecrosis*

#### **Case report**

An eleven year old apparently healthy boy of average build and nourishment, belonging to a middle socio-economic class, complained of sudden onset of severe excruciating chest pain, radiating to back while swimming in a swimming pool. He was immediately rushed to a private hospital nearby, but was declared brought dead on arrival. There was no history illness in the past, or trauma to the chest wall. All his family members including his elder brother were healthy. The case drew a lot of attention due to speculation by media and people as to the cause of death, which the media thought to be accidental drowning due to lack of adequate safety measures in private pools.

#### **Autopsy report**

The body was that of a eleven year old young boy, with rigor mortis present all over the body. Faint post mortem lividity was present on the back and dependant part of the body except pressure points. No signs of decomposition were

present. Conjunctivae of eyes were congested. Multiple small petechial haemorrhage were present over the upper part of the chest on the left side. There were no external injuries on the body. On internal examination a haematoma was present in an area of (3 x 3) cm in the substernal region which was due to the resuscitative effort at the pool side. Stomach had about 100 gms of partially digested food material. Mucosa of the stomach was healthy. All organs were pale. Extensive advential haemorrhage was present in ascending aorta, arch of aorta and descending aorta with extravasations of blood in left paravertebral region and thoracic cavity (Fig.no.1). On histopathology, part of the aorta showed, curvilinear eosinophilic elastic tissue with breach in continuity at places in media with mucinous material (Fig no.2). The cause of death was extensive advential haemorrhage due to inherent weakness in aortic wall, which is an uncommon congenital cause.

#### **Discussion**

Aorta is the largest artery in the human body that carries oxygenated blood from the left ventricle of heart to the rest of the body. Anatomically it is divided into the ascending aorta, the aortic arch, and the descending aorta. The descending aorta is further subdivided into the thoracic aorta (that part above diaphragm) and the abdominal aorta (that part below diaphragm). There are three layers of aortic wall, namely advential, medial and intimal layer. Rupture of aorta can be traumatic or non

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traumatic. A blow to the aorta can cause a tear with subsequent bleeding and dissection. Aortic dissection occurs when there is a defect in intima of aorta resulting blood tracking into the aortic tissues creating a false lumen. The exact cause of aortic dissection isn't known, however atherosclerosis and hypertension are the predisposing factors. Certain genetic connective tissue disorders like Marfan and Ehlers-Danlos syndromes<sup>1</sup> are also associated with aortic dissection. Cases of this nature are not uncommon. In a study by Vock R<sup>2</sup> a 19-year-old school boy was suffering from fluctuating uncharacteristic chest pain in the last 20 h before his death. He died unexpectedly within a few minutes of a hemopericardium, which resulted from an aneurysmal rupture of the ascending aorta. The patient's past history as well as the autopsy and ultrastructural findings led to the diagnosis of Marfan's syndrome

Bratzke H et.al.<sup>3</sup> have reported forty two cases of "spontaneous rupture of the aorta". The cause of changes in blood vessels was arteriosclerosis (53.6%) and medionecrosis (31.7%). In 57.1% of cases, ruptures were in the ascending part, in 11.9% in the arch, in 7.1% in the thoracic descending part and in 21.4% in the abdominal descending part. With the exception of 3 cases with incomplete rupture and death due to circulation failure, the commonest causes of death were pericardial tamponade or hemorrhage into the thoracic or abdominal cavity.

Aoyagi S et.al.<sup>4</sup> has reported a case of spontaneous non-traumatic rupture of the thoracic aorta in a hypertensive patient. The clinical findings suggested acute aortic dissection, and a large pericardial effusion was detected by echocardiography. Autopsy revealed a longitudinal intimal tear and a rupture in the postero-lateral aspect of the ascending aorta. Dettmeyer R et.al.<sup>5</sup> in their study have presented two rare cases of sudden death of a 31- and a 44-year-old woman. Autopsy and morphological examination in these cases revealed a dissection of the aorta. In both cases mucoid deposits in all layers of the media and rarefaction of the elastic fibers were found, rendering cystic medionecrosis as the cause of the aortic dissection. Fête R et.al.<sup>6</sup> have reported four cases of sudden death in children and adolescence due to unsuspected

cystic medionecrosis of the aorta.

In the present case there was no past history of any illness or any history suggestive of genetic disorder in the deceased and his family members. There was no history of trauma to chest wall. He was a regular swimmer felt chest pain while he was swimming. Swimming is a strenuous exercise resulting in substantial increase in cardiac output. This increased blood flow had resulted in rise in arterial pressure resulting in which means more blood flows through the arterial systems causing substantial damage to the intima of aorta with substantial loss of blood.

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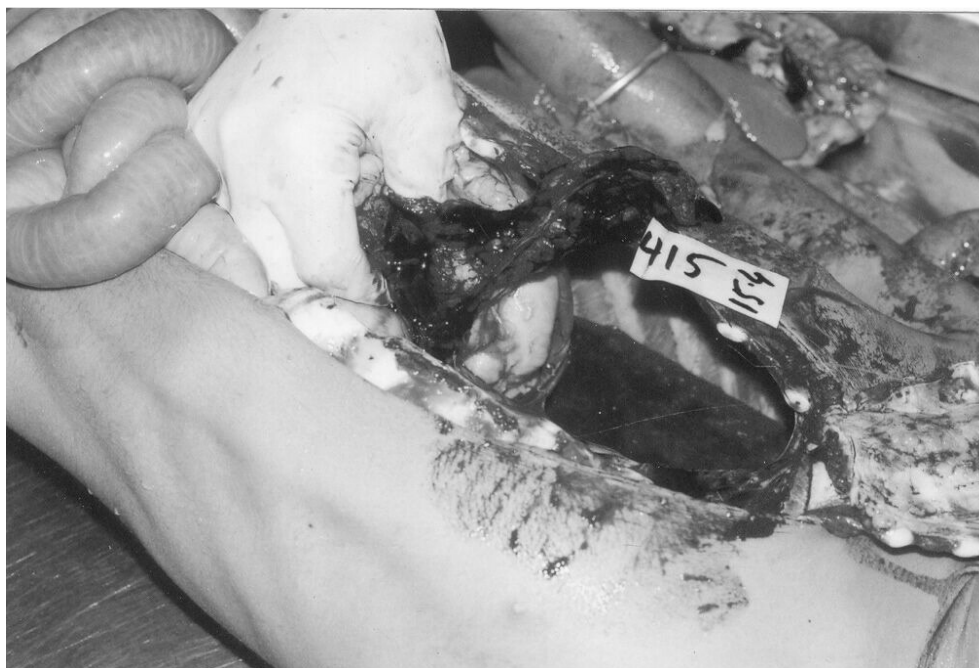


Fig. no.1

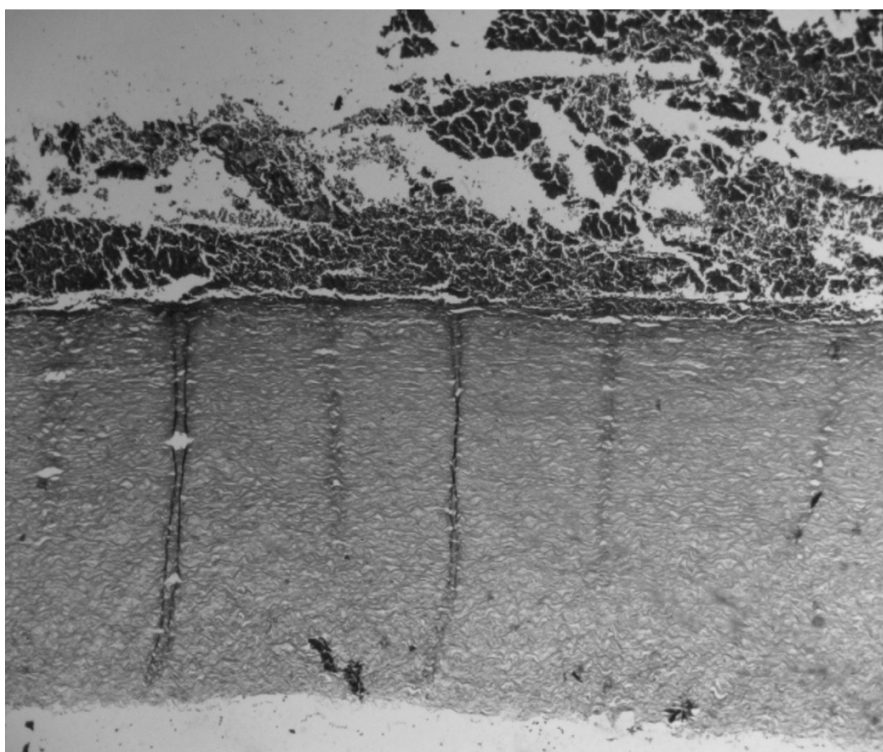


Fig. no.2



## Case Report

### Paraphimosis – A case report and medicolegal importance

*O. P. Saini\**, *Suman A\*\**, *Buri S\**, *Saini P.K.\**, *Mathur P.N. \*\*\** & *Gahlot R. K. \*\*\*\**

#### Abstract

Paraphimosis has been described by standard text books of forensic medicine as a cause of temporary impotence but present case suggests that it can be an evidence of sexual activity / intercourse also.

#### Case Report

An accused of rape and abduction, aged 25 years, was brought for examination of potency on 22.10.2002 in our OPD. On examination, the accused was found to be suffering from paraphimosis, ulceration on coronal sulcus, pus, edema and multiple prick marks. He was treated at a hospital where multiple pricks were made to treat the illness. He was not suffering from sclerosis of the prepuce and STD.

Patient was taken into confidence and he gave the history that he developed this problem while making an attempt to perform sexual intercourse. He consulted the doctor late due to fear of information by doctor to police.

This opinion was given by concerned forensic expert that he was temporarily impotent. The police was annoyed. They thought this opinion may cause damage to their case. So it was clarified subsequently that paraphimosis could be the result of sexual activity/sexual intercourse.]

#### Discussion

When the tight foreskin is retracted, it may sometimes be difficult to return and a paraphimosis results. In this condition the venous and lymphatic returns from the glans and distal

foreskin is obstructed and these structures swell alarmingly, causing even more pressure within the obstructed ring of prepuce<sup>1</sup>.

A large hydrocele, scrotal hernia, elephantiasis, phimosis, paraphimosis and adherent prepuce may cause temporary impotence by mechanical obstruction to coitus, as these conditions can be remedied by proper surgical treatment<sup>2</sup>.

Adults usually give a history of sexual intercourse prior to occurrence of paraphimosis<sup>3</sup>. The sexual activities like erotic dancing<sup>4</sup>, penile erection and delayed penile detumescence<sup>5</sup> have been reported causes of paraphimosis.

#### Conclusion

1. The present case suggests that paraphimosis is not only the cause of temporary impotence but could be the evidence of sexual intercourse/activity.
2. It has been reported that occasional patient presents with acute paraphimosis that has been present for many hours to days. This is typically seen in adolescent who is reluctant to reveal the problem to his parents.<sup>6</sup> Similarly, the false fear of report to police by treating doctor as in present case may be the another reason of delayed consultation.

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### Corrigendum

(For Vol. 30, No.1)

1. Tenure of Governing Council shall be read as “2008-09”.
2. Page-1 : “*Pankaj Markey*” is second author in case report entitled “ Lizard Bite.....”.
3. Page-1: Paragraph of copy right- submissions instead of subnissions.
4. Page-6 : All authors are from “Forensic Medicine Department” their respective college.
5. Page-11 &12 : The abbreviation “TBSA” stands for Total Body Surface Area.
6. Page-23 : Acknowledgment shall be read as “Authors are thankful to Director, State FSL, Sagar, M.P. for .....”.

**Editor**

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**Editor**

## **Review Article**

### **Role of informed consent**

*Mukesh Yadav\**

#### **Abstract**

These days, complete information with regard to surgery is required to be given to the patient so that the patient becomes aware of the procedure which is sought to be followed by the Surgeon. It should not be presumed that a patient may not / need not know the procedure or is incapable of understanding the medical terms and, therefore, there is no use in explaining them. There cannot be a presumption that all patients are ignorant about their anatomy or the adverse effects or benefits of surgery, and, in any case, those days are over. Hence, properly informed written consent before operation is the necessity.

It is difficult for the Court to accept contention of the doctor that because the general consent is taken, he can perform the operation in the way he likes. General consent is – while operating if some difficulty or any contemplated difficulty arises, then he can adopt such further or alternative operative measures or treatment to save the life of the patient or for patient's benefit. But, that would not give surgeon any discretion to do whatever surgeon chooses. This would also be against the medical ethics, and the purpose for which express consent is obtained.

If oral consent was obtained before two days of the operation, at least some notes would have been made and that is not produced on record.

**Key Words:** *Informed Consent, oral consent, General Consent, Negligence, Deficiency of Service, Consumer Court, Hospital, Res Ipsa Loquitor, Error of Judgment.*

#### **Introduction**

In a simple hysterectomy operation performed on the Complainant on 21.6.1993, she lost her kidney; her ovaries; she was required to undergo various further curative operations, because there was uncontrollable fecal discharge from vagina from 29.6.1993 onwards; and she suffered pain for months together after the operation. It is pointed out that her large intestines were exposed and small intestines were infected with adhesions at various places. A further surgery was carried out for repair of fistula and closure of fistula on 17.11.1993 and for closure of colostomy operation was performed on 21.2.1994. She remained in pitiable condition in the hospital. She was finally discharged on 14.3.1994.

Hence, complaint is filed contending that

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due to alleged deficiency in service by the expert doctors in the known hospital, the Complainant, her husband and three young daughters suffered and experienced immense trauma and hardship. For this deficiency, she has claimed compensation of Rs.25,50,000/-.

#### **Brief Facts of the case**

Complainant, who was 43 years at the relevant time, was suffering from bleeding for the last 2 to 3 months till she consulted, a Senior Doctor in Sir Ganga Ram Hospital and was diagnosed for Dysfunctional Uterine Bleeding (DUB). As the DUB was not responding to medical therapy she was advised for hysterectomy – removal of uterus. Her consent was taken for removal of uterus through abdominal route (Total Abdominal Hysterectomy, i.e. (TAH). Operation was performed on 21.6.1993. The contention of the Complainant is that in a simple hysterectomy operation, the Complainant suffered a lot and the following operations were performed:

## ***Yadav : Informed Consent***

- Dilation and Curettage (D&C);
- Hysterectomy - without consent through vaginal route, and thereafter, via abdominal route, TAH.
- Bilateral Salpingo Oophorectomy (BSO) i.e. removal of both fallopian tubes and the ovaries.
- Lapratomy; and
- Left Nephrectomy.
- Surgery for repair of fistula; and Surgery for closure of colostomy.

Before discussing the contentions, we would reproduce the law as settled by the Apex Court in a case [R] Spring Meadows Hospital & Anr. Vs. Harjol Ahluwalia & Anr. (1998) 4 SCC 39 SC:

On the issue of Doctor-Patient Relationship: Role of Medical Ethics: “.....The relationship between the doctor and the patient is not always equally balanced. The attitude of a patient is poised between trust in the learning of another and the general distress of one who is in a state of uncertainty and such ambivalence naturally leads to a sense of inferiority and it is, therefore, the function of medical ethics to ensure that the superiority of the doctor is not abused in any manner. [R]

### **Role of Informed Consent**

The Complainant, with regard to relevance of consent, has quoted excerpts of the Medical Code of Ethics, as under: “The followings acts of commission or omission on the part of the physician shall constitute professional misconduct rendering him / her liable for disciplinary action. 7.16: Before performing an operation the physician should obtain in writing the consent from the husband or wife, parent or guardian in the case of minor, or the patient himself as the case may be .....” [(The Indian Medical Council (Professional Conduct, Etiquette and Ethics) Regulations, 2002, Chapter 7 – ‘Misconduct’)]. -R

Questions which require consideration before National Commission were:

1. Whether a Doctor who is an expert Gynecologist, was justified in carrying out operation of hysterectomy via vaginal route even though specific consent was obtained for Total Abdominal Hysterectomy (TAH)?
2. Whether the Doctor was justified in removing healthy ovaries while performing the operation for hysterectomy, that too, without the consent of the Complainant?
3. Whether the vein can avulse to such an extent that kidney is required to be removed? Or
4. As there is no explanation as to how the vein had avulsed to such an extent that it could not be traced and clamped, whether the principle of ‘res ipsa loquitur’ (facts speak for themselves) could be applied as observed in the case of Savita Garg (Smt.) vs. Director, National Heart Institute, (2004) 8 SCC 56.

Whether there was deficiency in service by the Doctors?

For finding out whether there was deficiency in service by the Doctors, it would be better to first refer to the facts narrated by the Complainant and the contentions of the Doctors as well as the Hospital.

In this case, it is beyond reasonable doubt that consent of the Complainant was taken for TAH and operation was performed on 21.6.1993. This is borne out by:

- Admission slip dated 14.6.1993;
- Physician progress notes and order dated 20.6.1993 at 3.30 pm;
- Consent Form dated 20.6.1993;
- Pre-anaesthetic record dated 20.6.1993;
- Nurse’s daily record dated 21.6.1993 stating TAH on 21.6.1993;
- Operation notes of, Anaesthetist (TAH).

From this, it is apparent that express consent was taken only for TAH.

Further, for the time being assuming that vaginal hysterectomy may be by a simple procedure and less complicated than TAH, but the Physician is required to carry out the same after obtaining informed consent and that has not been done in the present case.

The Opposite Party No.2 has not produced any material on record as to why she chose vaginal route instead of TAH. But, she in her written submissions has laid stress on advantages of vaginal hysterectomy over abdominal hysterectomy.

In this regard she has stated that consent was taken for TAH in view of previous two caesarean sections; said patient (or for that matter any other patient in similar circumstances)

was told that she would tentatively be prepared for abdominal hysterectomy but the final decision of the route would be made after re-examining patient in the operation theatre to assess the feasibility of vaginal hysterectomy. This protocol was followed, at that time, for any patient where the final decision of route of hysterectomy is made in the operation theatre, i.e. where there is no absolute indication for abdominal hysterectomy and no absolute contraindication for vaginal hysterectomy. She further stated that 'had the final decision been only for abdominal hysterectomy then orders would have been "Please admit patient on 20.6.1993 for Abdominal Hysterectomy (AH) on 21.6.1993".'

She had stated that actually what was written is "Please admit Mrs. Saroj Chandhoke on 20.6.93, and prepare her for Abdominal Hysterectomy (AH) on 21.6.93". In this connection her contention is that the patient was 'prepared' only for the ultimate eventuality, i.e. TAH, i.e. when the vaginal hysterectomy could not have been possible.

### **On the issue of General Consent**

In our view, the aforesaid contention cannot be accepted. It is to be stated that as contended by Dr. Bhandari, she is an experienced Gynaecologist. Hence, she was expected to take express informed consent to perform hysterectomy via vaginal route. Further, it is difficult to accept her contention that because the general consent is taken, she can perform the operation in the way she likes. General consent is – while operating if some difficulty or any contemplated difficulty arises, then she can adopt such further or alternative operative measures or treatment to save the life of the patient or for patient's benefit. But, that would not give her any discretion to do whatever she chooses. This would also be against the medical ethics, as quoted above and the purpose for which express consent is obtained.

In the additional written submissions regarding 'consent', it has been stated as under: "I also consent to such further or alternative operative measures or treatment as may be found necessary during the course of the operation or treatment and to the administration of general or other anaesthetics for any of these purposes".

Thus, as per Consent Form, if found necessary, the surgeon can do alternative procedure. Even though Consent Form read TAH (Total Abdominal Hysterectomy) on examination by answering respondent in operation theatre it was found, as appearing in the operation notes also, (page 130-131 file OP 61 Vol.10 of Court record) that all findings favoured vaginal hysterectomy so the anaesthetists and the patient were informed by answering respondent that she would be proceeding with vaginal hysterectomy. This is done in all cases where re-examination in the theatre is done."

The aforesaid part of the Consent Form permits the surgeon to search further alternative measures during the course of the operation, as may be found necessary. But that would not mean that if consent is taken for TAH, straightaway the doctor can proceed to VH i.e. a totally different route, for which no consent is taken. Consent Form only provides that 'during the course of the operation', if it is found that the abdominal hysterectomy is risky because of some reasons, the doctor can switch over to an alternative route. But before starting of the operation, switching over to an alternative operative measure cannot be said to have been consented, even as per the aforesaid Consent Form.

### **On the issue of 'Oral Consent'**

However, it has been contended by Respondent Doctor that oral consent was obtained from the Complainant.

In our view, if oral consent was obtained before two days of the operation, at least some notes would have been made and that is not produced on record.

Further, the aforesaid contentions with regard to obtaining oral consent are denied by the Complainant in her replies to the interrogatories. She has specifically stated that she was in the hospital with clear understanding that she was to undergo only abdominal hysterectomy. She also stated that Doctor never informed her and her husband that as she had undergone two previous caesarian sections and she was aged about 45 years ovaries should be removed at the time of hysterectomy, nor she requested Doctor to

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remove her ovaries. The only discussion that took place between her and Doctor was regarding abdominal hysterectomy. She admitted that in the Original Petition she has not stated with regard to removal of ovaries, nor she had given consent for removal of ovaries.

From the aforesaid evidence, it is difficult to believe the say of Doctor that oral consent was taken for removal of ovaries or oral consent was taken for performing hysterectomy through vaginal route. [16]

Fourthly, it has been pointed out that, in medical literature, for BSO, i.e. Bilateral Salpingo Oophorectomy, it being a separate surgical procedure, it should be specifically and separately mentioned by the doctors, and also requires the specific consent of the patient. The medical literature also states that even where ovary removal is recommended for prophylactic reasons, i.e. where there is no apparent problem with the ovaries but they are advised to be removed to prevent future possibility of ovarian cancer, the consent of the patient for removal of ovaries should always be obtained. [16]

Excerpts of medical literature stating the above principles are reproduced herein below:

- The term 'total hysterectomy' means the removal of the uterine body and all the cervix. If a surgeon removes the uterus plus the appendages, let him say so without any equivocation and use the term 'total hysterectomy plus bilateral salpingo-oophorectomy' (or right or left salpingo – oophorectomy, if only one appendage is removed). Similarly, he may remove one or both the tubes and conserve one or both ovaries – for example, 'total hysterectomy plus bilateral salpingectomy'. [R] (Shaws Textbook of Operative Gynecology – John Howkins (mentor of Respondent No.2), Chapter 9, p.165, Vol.III, O.P. 61 of 1996, 1<sup>st</sup> Column 3<sup>rd</sup> line from the top.).
- "Certainly, all patients undergoing prophylactic Oophorectomy should consent to the procedure". [R] (Vaginal Hysterectomy by Shirish Sheth and John

Studd Chapter 13, The place of Prophylactic Oophorectomy at hysterectomy, page 767, 2<sup>nd</sup> column, 13<sup>th</sup> line from the bottom, Respondent No.2's evidence affidavit, Vol.III O.P. 51 of 1996].

"Studd is of the opinion that prophylactic oophorectomy should be offered to all women over 40 years having abdominal hysterectomy and should only be performed after full discussion and consent." [R] [Chapter 18, Vaginal Hysterectomy, by SS Sheth, p.618 – Oophorectomy at vaginal hysterectomy, 2<sup>nd</sup> Column, 3<sup>rd</sup> sub-para, 3<sup>rd</sup> line, Respondent No.2's evidence affidavit, Vol.III, OP 51 of 1996].

Hence, for such operation informed consent after full discussion is must. On the issue of Avulsion of vein – Infundibulopelvic Ligament:

Further, it is to be stated that if only hysterectomy was performed whether by abdominal route or by vaginal route, the question of avulsion of vein would not have arisen. That question arose only because of removal of ovaries.

For this, the Complainant has pointed out that:

"Infundibulopelvic ligament contains the ovarian artery and vein. The ligament is attached to the ovaries and not to the uterus. This ligament does not come into the picture at the time of a Total Hysterectomy operation whether by the abdominal route or by the vaginal route. This ligament is clamped only when BSO i.e. Bilateral Salpingo Oophorectomy operation (removal of both fallopian tubes and both ovaries) is to be performed.

As per the medical records filed by the Respondent No.1 Hospital, when the left infundibulopelvic ligament was being clamped one of the veins avulsed. This ligament was being clamped despite the fact that there was neither any planning but also no consent of the patient for removal of ovaries and fallopian tubes. The record Operation at p.11 (internal p.210) Vol.II, O.P. No. 61 of 1996, states, "..... left infundibulopelvic ligament which was clamped, cut and transfixed. There were multiple veins, one vein from the avulsed resulting in brisk hemorrhage".

Medical literature and the statement of Respondent Doctor establishes that the Infundibulopelvic ligament is clamped only when a BSO i.e. Bilateral Salpingo Oophorectomy operation (removal of both fallopian tubes and both ovaries) is to be performed and the same is reproduced herein below:

“This operation is performed in cases when the indications for hysterectomy are present and the appendages are found to be diseased at the time of operation.” and “Technique: The first step is to identify the infundibulopelvic fold which contains the ovarian vessels and lymphatics.” [R, R] (Shaws Text book of Operative Gynecology – John Howkins (mentor of Respondent No.2), Chapter 9, pg. 165, Vol.III, OP 61 of 1996, 1<sup>st</sup> column, under the heading, ‘Total Hysterectomy together with the removal of the appendages’.]

“Infundibulopelvic ligament is the tissue through which the ovarian vessels (artery and vein) pass while returning the blood from the ovary to drain into the renal vein on the left side which is located in the upper part of abdomen. The clamp is applied on this ligament in both abdominal and vaginal hysterectomies, when the ovaries are being removed.” [R] [Pg 33, Vol.III (Respondent No.2’s evidence affidavit), OP 51 of 1996, 2<sup>nd</sup> line from the top.]

Thus, from the above discussion, it can safely be held that avulsion of vein was encountered when the Respondent No.2 transgressed the authority and consent given by the patient for TAH, i.e. Total Abdominal Hysterectomy alone and went on to perform the operation known as Bilateral Salpingo Oophorectomy (removal of both ovaries and fallopian tubes) without the knowledge and consent of the patient.

Doctor admitted in her evidence that after operating for about an hour when she was in the last stage of operation which involved ligating the left infudibulopelvic ligament, the clamped veins suddenly avulsed leading to profuse bleeding. She tried to catch the bleeder through the vaginal passage but could not trace as the bleeder had retracted upward. At that stage she decided to open the abdomen to try to catch the bleeder from above.

It is pointed out by the learned Counsel for the Complainant that the left ovarian vein leaves from the end of the ovary (which lies inferior to the pelvic inlet, i.e. inferior to the start of the Sacrum (S1), at about S3) and joins the left renal vein (which lies between LI and LII). Moreover, the ovaries lie very close to the bladder and the length of the ureters (from the bladder to the kidney) is 10 inches. The uterus and the left renal vein join the kidney at almost the same location (between LI and LII). Thus, the length of the left ovarian vein in an adult woman is approximately 8 to 10 inches.

It is pointed out by the learned Counsel for the Complainant and rightly that if the abdomen was opened at the beginning of the operation, this problem would not have arisen and unnecessary effort to remove uterus through vaginal route would have been avoided, that too, in a case where the Complainant had two cesarean deliveries.

Secondly, he rightly contended that in a big well-equipped hospital like the Respondent No.1, in case of vein avulsion, the Respondent No.2, ought to have kept or called an expert Vascular Surgeon ready to manage the situation.

Further, it may be presumed that functioning of the Complainant is not affected by the removal of Ovaries or that ovaries can be removed in case of necessity. But, at the same time, in a planned surgery, before removing the ovaries, consent ought to have been obtained.

## **Emergency**

Finally, for removal of the kidney, as it is submitted that it was required to be removed because of compulsion, i.e. to save the life of the Complainant, the learned Counsel for the Complainant has not pressed that there was deficiency on this ground.

Why deficiency in service?

Deficiency in service arises because an expert or a very skilled person commits mistake, which mistake would not have been committed even by an ordinary skilled person, because everyday number of such hysterectomy operations are being performed all over the country. Secondly, if complications in abdominal

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hysterectomy were more, at least express consent ought to have been taken for alternative route, namely, VH.

#### **Oral evidence in defense**

In support of her contention with regard to avulsion of vein, reliance is sought to be placed upon the affidavits of sixteen doctors.

In our view, the aforesaid oral evidence does not throw any light on the points which are discussed above.

For the aforesaid affidavit, there is no dispute. We agree that respondent doctor is a highly skilled Gynaecological Surgeon. It is also true that complications can occur during the operation, but at the same time, there should be a reasonable explanation as to how the said complications had occurred. Merely stating that during the operation haemorrhage or bleeding is a most common surgical complication would not absolve the operating doctor from his/her duties to be skillful all-throughout. Hemorrhage or bleeding may be common in surgical complications. But, to say that there would be avulsion of vein to such an extent and that it could not be clamped is not justified. From the avulsion of the vein to such an extent the kidney is required to be removed, an inference can be drawn that some wrong vein was cut during the operation. There is no reason given why ovaries were required to be removed in a planned operation of hysterectomy without the consent of the patient or her husband.

Respondent doctor has also relied upon the evidence of another Doctor wherein it is stated that:

“In case where clinical findings showed that vaginal hysterectomy is possible, the operating Gynaecologist would still re-examine the patient, under anaesthesia, in the Operation Theatre and then finally decide the route for the hysterectomy. All patients are required to be prepared for abdominal hysterectomy, prior to being taken to the Operation Theatre. Vaginal preparation is done in all hysterectomies.”

She further deposes in Paras 18 and 19 of

her affidavit that “Under the circumstances Gynaecologists, with experience in vaginal surgery, would certainly prefer to perform hysterectomy through vaginal route. In the same situation, I would have also performed, vaginal hysterectomy, as it would have been in the interest of the patient.”

In the present case, the question is not whether TAH is preferable to VH. The main question is when the patient is prepared for TAH and has given written consent for TAH, and when no consent is obtained or no information is given to the patient for adopting the VH route or removal of ovaries; whether a different route could be adopted and the ovaries could be removed? In our view, it cannot be done. Then, in such set of circumstances, it cannot be said that the operating surgeon can carry out the surgery of his / her choice, because he / she may be expert in the field. If he/she does so, he/she does it at his/her risk and mishap.

#### **Removal of Ovaries without consent**

From the above discussion, it can be concluded that entire deficiency in service arises because of removal of ovaries and the mishap occurred at that time. If ovaries were to be removed, the doctor ought to have informed the patient in advance, but that has not been done. How this mishap has occurred is not known but something wrong had happened at the stage when ovaries were being removed and that has resulted in avulsion and retraction of the ovarian vein. In such a case, the principle laid down in a case [R] would be applicable.

In the present case, neither the Hospital nor the Doctor has given any reason as to why ovaries were removed without taking consent of the Complainant. It is for the Surgeon who operates to explain as to why the ovaries were required to be removed and how such a mishap has occurred; and, why the Doctors were not in a position to handle the bleeding vein. They have failed to establish the cause except by merely stating that such complications may arise in such operations. In our view, that would hardly be a plausible explanation for such a mishap.



## Summary and Conclusions

In conclusion it is held that:

- In a simple Hysterectomy operation, the Complainant lost her ovaries and left kidney. She was required to undergo other operations for control of fecal discharge from vagina. She was required to stay in the hospital for complete cure for months.
- Informed consent was obtained only for TAH. There was no necessity of trying to operate via vaginal route.
- No consent was obtained for removal of ovaries in advance planned surgery.
- In the present case, the question is not whether TAH is preferable to VH. The patient was prepared for TAH and had given written consent for TAH and no consent was obtained or no information was given to the patient that her ovaries would be removed. In such set of circumstances, it cannot be said that because a surgeon is expert in the field he / she can carryout the surgery of his choice. If he / she does so, he / she does it at his / her risk in case of mishap.
- No doubt, in case of emergency there can be deviation in mode of surgery, but not in a planned surgery where express consent for a particular mode is taken from the patient, particularly, when there is no emergency.
- Before performing surgery, properly informed written consent is must. No doubt, while operating, to control adverse situation or to save the life of the patient or for benefit of the patient, other procedure could be followed or other part of the body could be operated.
- As held in *Spring Meadows Hospital (supra)* it is to be seen that superiority of the Doctor is not abused in any manner. Further, if during the operation any mishap occurs because of error of judgment, it would be deficiency in service or negligence, if that would not have been committed by a reasonably competent professional man professing the standard and type of skill that a surgeon held out as having. The respondent doctor is an expert Gynaecologist who has performed many such operations as contended by her and Respondent Hospital is a known big Hospital.

In such a case, it is difficult to accept that for

- no fault there was avulsion of vein to such an extent that left kidney was required to be removed. Inference could be that there was some error which resulted in cut of a vein.
- Further, it was the duty of the Doctor to advise the patient that D&C should be performed reasonably well in advance of performing the operation for hysterectomy.

For finding out deficiency in service, motive is not relevant ingredient. Act may be bona fide. But, if it is performed negligently or if any error is committed which the ordinary skilled person would not commit, then it is deficiency in service.

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## **Review Article**

### **Euthanasia [ Mercy Killing]**

*P.N.Murkey\* & Konsam Suken Singh\*\**

#### **Abstract**

Euthanasia is a controversial subject, not only because there are many moral dilemmas associated with it, but also in what constitutes its definition. At the extreme ends of disagreement, some school of thoughts are of the opinion that euthanasia, also known as physician assisted suicide or physician aid in dying, is a meriful act of dying. At the other end, there are opponents of euthanasia who believe that this method is a form of murder. In the present article, the authors give a brief description about the subject and discuss its moral implications in different countries in brief.

**Keywords :** *Euthanasia, suspended animation, letting die, physician assisted suicide.*

#### **Introduction**

The term euthanasia was derived from the Greek words “eu” and “thanatos” which means “good death” or “easy death”. It is also known as Mercy Killing. Euthanasia literally means putting a person to painless death especially in case of incurable suffering or when life becomes purposeless as a result of mental or physical handicap.<sup>1</sup>

The purpose of life is to be happy and to make others happy if possible, to grow old gracefully and to die with dignity. So the question of euthanasia arises on three occasions-<sup>2</sup>

- 1) At the beginning of life (at birth)
- 2) At the end of natural life ( terminal stage) and
- 3) When a person is severely impaired as a result of brain damage (unforeseen mishap)

#### **At Birth**

- In case of physically and mentally handicapped infants
- Decision rests on the parents or on the doctors aided by the law of the land
- The decision should be based on :
  - quality of life the child can expect and

its consequent impact on the parents, society and the resources of the State and also care of the child after death of the parents.

#### **At terminal stage**

- The dying conscious patient can give his own consent or decision as to continue or not the ongoing treatment if he wishes to.
- No moral obligation on doctors to preserve life at any cost.

#### **Unforeseen mishap**

- When a person is severely impaired as a result of brain damage either due to violence, poisoning or natural causes where the brain suffers from hypoxic brain damage from which it cannot recover irrespective of the treatment given his life can be SUSTAINED by artificial means but only IN A STATE OF SUSPENDED ANIMATION.
- This gives rise to the confusion whether the treatment is prolonging LIFE or DEATH !!
- In such cases he may be allowed to die in comfort and with dignity

(Such a step would also save the resources of the State for more rational uses)

#### **Types :**

- 1) ACTIVE or Positive
- 2) PASSIVE or negative ( also known as letting-die)

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- 3) VOLUNTARY
- 4) INVOLUNTARY
- 5) NON-VOLUNTARY

### 1) Active Euthanasia

- It means a positive merciful act to end useless sufferings and a meaningless existence. It is an act of COMMISSION for example by giving large doses of a drug to hasten death.

### 2) Passive Euthanasia (letting-die or aid in dying)

- It implies discontinuing or not using extraordinary life sustaining measures to prolong life. Others include
- Act of OMISSION such as failure to resuscitate a terminally ill or incapacitated patient (e.g a severely defective newborn infant). Other methods include disconnecting a feeding tube, not carrying out a life-extending operation or not giving life-extending drugs etc. **'Letting die'** ... means to give way to an ongoing inner-organismic process of disintegration, without supporting or substituting vital functions. Therefore the extubation [removal from a ventilator] of an incurably ill patient, though a physical action with subsequent death, is not killing in its proper meaning... The extubation does not produce the effect of death; it only influences the time of its occurrence. Calahan (1992) has aptly illustrated this difference of causality: The lethal injection kills both the ill as well as the healthy person; the discontinuation of life-sustaining treatment, however, only causes the death of the mortally ill, whereas on the healthy it would have no effect at all."

### 3) Voluntary

- When the euthanasia is practiced with the expressed desire and consent of the person concerned.<sup>7</sup>

### 4) Non-Voluntary

When it is practiced without the scope to make the desire of the subject available

- This includes cases where:
- the person is in a coma
- the person is too young (e.g. a very young baby)
- the person is senile
- the person is mentally retarded to a very severe extent
- the person is severely brain damaged
- the person is mentally disturbed in such a way that they should be protected from themselves"

### 5) Involuntary

- When the euthanasia is practiced against the will of the person.

### Doctor-Assisted Suicide

Assisted suicide: Someone provides an individual with the information, guidance, and means to take his or her own life with the intention that they will be used for this purpose. When it is a doctor who helps another person to kill themselves it is called "physician assisted suicide or doctor assisted suicide"<sup>3</sup>

In doctor assisted-suicide, the doctor provides the patient with medical know-how (i.e. discussing painless and effective medical means of committing suicide) enabling the patient to end his / her own life.<sup>1</sup>

### Ethical Contradiction

The Hippocratic oath and International code of medical ethics pose ethical contradiction for the doctors. Hippocrates mentions euthanasia in the Hippocratic Oath, which was written between 400 and 300 B.C. The original Oath states: "*To please no one will I prescribe a deadly drug nor give advice which may cause his death.*" According to him, a doctor is to relieve the pain of his patient in one hand and protect and prolong his life on the other. **The first can be used in favour of the doctrine of euthanasia but the second counters the doctrine.** American Medical Association hold it inconsistent with the ethics of advanced medical technology. Advanced medical technology could or should prolong sufferings.<sup>4</sup>

## **Religious And Philosophical Background**

No religion approves euthanasia. However, philosophers like Aristotle, Plato and Pythagoras favored euthanasia. Different organizations have moved from time to time to form public opinion in favour of euthanasia and legalize it. The Roman Catholics oppose the right of self killing.<sup>4</sup>

## **Trends Of Euthanasia In Different Countries**

Laws around the world vary greatly with regard to euthanasia, and are constantly subject to change as cultural values shift and better palliative care, or treatments become available. It is legal in some nations, while in others it may be criminalized.

The Canadian law allows a person to refuse medical treatment and the medical profession accepts the 'living will', but the law does not allow the doctor to actively help someone to kill himself. However, amidst the ongoing debates, the Netherlands became the first testing ground for the world since it legalized euthanasia on 28<sup>th</sup> November 2000. Passed by a vote of 104 to 40, the law provides for the addition of a special "criminal liability exclusion" clause to Article 293 and 294 of the Dutch Penal Code that deals with the offence of homicide. Australia also has a voluntary euthanasia law which is steadily working well. In Australia, a computerized injection system is in use to accomplice euthanasia.<sup>5</sup>

Currently in the UK, any person found to be assisting suicide is breaking the law and can be convicted of assisting suicide or attempting to do so (i.e. if a doctor gives a patient in great pain a bottle of morphine to take (to commit suicide) when the pain gets too great). Although two-thirds of Britons think it should be legal, a recent 'Assisted Dying for the Terminally-Ill' Bill was turned down in the lower political chamber, the House of Commons, by a 4-1 margin. In USA the practice of euthanasia is a clear offence too theoretically, but in real practice three judgements of different courts during trial of euthanasia cases seem to be liberal. Supporters advances augument of civil rights of terminally ill. Opposers say it is to eradicate inconveniently ill elders. Moreover, some states in the USA including Washington D.C. have laws that

recognise the LIVING WILLS (law to say in advance that one does not want to be kept alive with artificial means when there is no hope).

Though not approved, the legal position in Germany, Switzerland, Poland etc. are comparatively liberal.<sup>4</sup>

## **India**

Like almost in all other countries, euthanasia has no legal status. The practice of euthanasia is a clear act of offence, either a suicide and assistance to commit suicide or a murder. The latest judgement of Supreme Court declares that : Right to DIE is not included in the Right to LIFE under Article 21 of Indian Constitution. Article 21 is a provision guaranteeing protection of life and personal liberty and by no stretch of imagination can imply 'EXTINCTION OF LIFE'. 'Right to life' is a natural right embodied in Article 21 but suicide is an unnatural termination or extinction of life and therefore not compatible and inconsistent with the concept of 'right to life'.<sup>1</sup>

## **Conclusion**

Views, ideas and laws of euthanasia vary greatly from country to country and from individual to individual. Euthanasia has been at the centre for a moral debate for long. The individual's right over his/her life and the value placed on human life by the society seem polar opposites in this debate. Opponents of euthanasia maintain that there is a clear moral distinction between merely allowing to die and actually causing or deliberately hastening someone's death. For some it is a crucial moral discernment; for others, it represents either casuistry or moral fiction. In India also, the debate on euthanasia has again become a live issue as the supreme court of India recently passed a verdict that attempted suicide is not a crime. This signifies social approval of suicide and euthanasia which is assisted suicide. As far as we (the authors of this article) are concerned, considering its moral and ethical values of the concept and also its legal conviction, we are of firm belief and opinion that India must never practice euthanasia by law. In this regard it would be quite worthwhile to remember the words of Lord Edmund Davis – "killing both pain and patient may be good morals, but is far from CERTAIN that it is good law."<sup>6</sup>

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## **Review Article**

### **Collection, preservation and forwarding of biological samples for toxicological analysis in medicolegal autopsy cases : A review**

*Tabin Millo<sup>\*</sup>, A. K Jaiswa<sup>\*\*</sup> & C. Behera<sup>\*\*\*</sup>*

#### **Abstract**

Collection of proper autopsy specimen is an essential step in the process of toxicology case work<sup>1</sup>. Improper collection of these specimens can greatly alter or negate chemical and toxicological analysis. This article is an update about the standard methods of biological specimen collection procedures for toxicological analysis which will be helpful for the forensic pathologist and forensic scientists.

**Keywords:** *Sampling, preservation, body fluids, poison, tissues*

#### **Introduction**

In handling the Medicolegal autopsy cases, certain standard guidelines are necessary to be laid down to assist in the selection of appropriate specimens of the body fluids and tissue for postmortem biochemical and toxicological analysis. After death there is a rapid change in the cellular level biochemistry due to autolysis. The drugs and other poisons may be released from the binding sites in tissues and major organs.

The unabsorbed drug may diffuse from stomach, care should be taken in selection of blood and tissue sampling sites. Many a times the autopsy is conducted before all the circumstantial evidences are collected and investigated. Hence, it is vital to preserve all the necessary samples at the time of autopsy. Ideally the samples for toxicological or biochemical analysis should be collected before the postmortem. However it may not be possible for all the samples and there may be difficulty in sampling without opening the body.

#### **Biological fluids**

##### **1. Blood**

In all medicolegal investigation cases a

blood specimen should be obtained when blood is available. It is used as a reference sample for identification in unidentified cases and also for toxicological analysis. Peripheral blood concentration have been shown to be more reliable for toxicological analysis than the conventional heart blood. Therefore, in all suspected poisoning deaths or in all cases of unknown causes of death a femoral blood specimen should be collected. Before autopsy it can be collected by inserting the needle at about two finger breadth below the inguinal ligament at middle point marked between the the anterior superior iliac spine and the symphysis. But it is best obtained by puncturing the femoral vein using a 30 ml syringe with wide bore needle after exposing the vein by dissection and clamping or ligating it proximal to the collection site.

Usually 20 ml of blood<sup>4</sup> is sufficient and it has to be preserved in sodium fluoride of 10mg/ml and potassium oxalate, 30 mg/10 ml of blood concentration in a fresh wide mouthed glass container of 30 ml with screw cap<sup>1</sup> ( universal container). The glass container should be made of amber glass to inhibit photodegeneration. The rubber or cork caps should be avoided. Sodium fluoride protects blood from postmortem changes such as bacterial production of ethanol or other alcohols. It also helps to protect other labile drugs such as cocaine, ntrazepam and clonazepam from degradation<sup>4</sup>. The most satisfactory way of

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obtaining a venous blood sample is venepuncture of the femoral vein by direct puncture in the groin before the autopsy begins.

## **2. Urine**

Urine specimen is of great value even in small amount especially in screening of unknown drug or poison, particularly substance of abuse since the concentrations are generally higher than in blood and a number of metabolites may also be present. Urine specimen are also valuable in the quantitative analysis of alcohol, where there is uncertainty over the validity of a blood specimen. Before conducting the autopsy, urine can be collected by catheter or suprapubic puncture with 5-10 ml syringe and needle ( 22 gauge 3 inch). With the body in supine position, palpate the bladder and identify the insertion site at midline and 2 cm cephalad to the pubic bone. At the insertion site, introduce the 22 gauge 3 inch needle attached to the 10 ml syringe. Direct the needle caudad ( the bladder is a peritoneal organ in adults) at a 10° to 20° angle from the perpendicular at midline. Gently aspirate while introducing the needle. If no urine is aspirated, withdraw the needle to the subcutaneous space and readvance in a slightly different direction, 10° caudad or cephalad and aspirate again. But it can be best obtained during autopsy after exposing the abdomen by puncturing the fundus of the bladder with syringe and needle. It has to be preserved in sodium fluoride (10 mg/ml) in a 30 ml glass container with a screw cap. A sample of 20 ml is sufficient for toxicological analysis.

## **3. Bile**

Bile is helpful in estimating the drugs, which are concentrated by liver and excreted into the gall bladder like opiates and acetaminophen ( paracetamol) . It is not routinely preserved, but only in selected cases. It is preserved in 30 ml glass screw capped container. A 20 ml of bile is adequate for toxicological analysis. It can be collected directly by incising the gall bladder into a glass bottle. It is a viscous fluid, which makes it difficult to be sucked by needle and syringe.

## **4. Vitreous Humor**

The vitreous humor specimen is particularly useful for alcohols, or in diabetes and insulin related deaths. It is also very useful where the body has

decomposed. The fluid in the eye resists putrefaction longer than other body fluids as it is sterile and remains well protected in eye. It is useful for certain biochemical tests such as urea, creatinine, glucose, lactose and alcohol. Vitreous humor must be collected from both eyes in separate vials of 10 ml. It is preserved with sodium fluoride (10 mg/ml). A puncture should be made through the sclera at the outer canthus with a fine 19 gauge needle in 5 ml syringe. It should be placed laterally as far as possible, pulling the lid out, so that when released, it returns to cover of the puncture mark for cosmetic reasons. The sclera should be punctured at a latitude of about 60° taking the pupil as the north pole. The needle should be directed towards the centre of the eyeball. The fluid comes out slowly because of its viscosity. Gentle aspiration will usually yield 2-3 ml of vitreous humour. Once the sample has been collected the syringe should be detached from the needle, leaving the needle in place. A volume of water or physiological saline equal to the amount of vitreous humor removed should be slowly injected into the eye to achieve cosmetic restoration. The preservative used is sodium fluoride.

## **5. Cerebrospinal fluid**

The cerebrospinal fluid sample is rarely required for toxicological analysis. If needed it should be collected by cisternal puncture. It is difficult to collect CSF at medicolegal autopsy by conventional lumbar puncture. It is relatively easier to obtain by cisternal puncture. With the neck flexed, palpate the atlanto- occipital membrane in the midline and, using a needle and syringe, gently introduce a disposable spinal needle through the skin at that point, directing the needle towards the bridge of the nose. As the atlanto occipital membrane is punctured at a depth of approximately 2 cm, loss of resistance will be felt following which CSF can be aspirated. It should be collected in a 30 ml screw capped plastic or glass container. The CSF sample has to be preserved in sodium fluoride.

## **6. Other body fluids**

In cases where blood and urine are not available other available body fluids like pericardial<sup>14</sup> and synovial<sup>15</sup> fluids can be used for toxicological analysis like alcohol.



## **BIOLOGICAL TISSUES**

### **1. Liver**

Body tissues are often used for toxicological analysis. Liver is the most important tissue because it concentrates many substances. It can contain large amount of drugs and metabolites and may in some difficult cases help establish whether acute or chronic toxicity has occurred. Ideally the part of the liver retained should be fresh unfixed, taken from the periphery of right lobe, away from the stomach, major vessels and gall bladder. A minimum of 100 gm is sufficient for toxicological analysis.

### **2. Stomach contents**

The other routinely preserved viscera are stomach and small intestine with its contents and kidney. The sample is useful when drugs have been taken orally as the concentrations will be many times higher than in other fluids. It can also be helpful to determine the amount of drug present in stomach if blood concentration is difficult to interpret. The stomach should be ligated on both ends (oesophagus and pylorus) and dissected out. Then the greater curvature should be opened up, so that, the contents directly pour onto the wide mouthed jar. About 30 cm of small intestine are preserved with the contents. One half of each kidney is preserved. The stomach and intestine with its contents are preserved in one bottle.

### **3. Other tissues**

Other tissue samples may be useful for investigating deaths where volatile substances e.g solvents or gases, are implicated. Brain, fat tissue, lung and kidney are the most useful. Ideally a wet unfixed tissue should be collected into separate glass containers. In case of lung, the sample has to be collected from the apex of the lung. The whole lung may have to be preserved in case of solvent abuse or volatile substance poisoning. After opening the thorax the lung is mobilized and the main bronchus tied off tightly with a string ligature. The hilum is then divided and the lung placed immediately into a nylon bag ( prevents the volatile in the sample from escaping) which is sealed and sent as soon as possible to the laboratory.

### **4. Bone and Muscle tissue**

In case of decomposed, exhumed, burnt or

skeletonized body it becomes difficult and challenging due to absence of blood or scarcity of solid tissues. But, whatever remains are available we have to collect all the relevant samples though it may not be the routine sample. If bones<sup>10</sup> are available the whole long bone should be collected and preserved. It has to be dried in normal temperature and sealed in plastic bag. Bone marrow samples may be useful in drug identification ( qualitative and also quantitative ) in cases where all soft tissue has degenerated. The skeletal muscle is also useful for toxicological analysis. A 100 gm muscle tissue (preferably quadriceps muscle ) has to be preserved in saturated solution of common salt in a plastic or glass container.

### **5. Hair and Nail**

Hair and nails are useful samples for analysing chronic poison ( heavy metals) or drug of abuse (opioids). These should be sent if chronic poisoning is suspected, particularly to distinguish between episodic or continuous exposure, or for those poisons which may have already been eliminated from the body by the time of death. Hair should be plucked from the scalp with the entire root, shaft and tip. About 500 ug (20 – 30 hairs ) of hair should be collected and laid aligned by rolling into a clean plastic or foil sheet with an indication of the scalp ends on the attached label. The whole nail from one toe or fingers can be lifted and collected in a plastic packet.

### **6. Maggots**

In decomposed body, if maggots are present 20 gms of maggots<sup>9,16</sup> can be collected in a plastic or glass container with saturated common salt as the preservative. If drugs or intoxicants are detected they could only have originated from tissues upon which the larvae were feeding. However the correlations between the level in the larvae and the human has not been established. It only provides qualitative information about drug use.

### **7. Injection sites or snake bite**

In case of death due to injection of drugs or suspected snake bite the sample from the injection site has to be preserved. The skin sample with the underneath muscle tissue around

the injection site area must be preserved along with a control sample of similar composition from the opposite normal site in saturated solution of common salt

### **8. Tablets, powders and syringes**

These samples should be packed with care and any needle protected by a suitable shield to avoid injury. These items may be particularly useful in deaths in medical personal or drug addicts who may use agents which are difficult to detect once they have entered the body.

The use of disposable, hard plastic or glass containers are recommended for preservation. The plastic containers ( especially of polypropylene) are increasingly used and have the advantage of not smashing when dropped and also much lighter. The ideal samples are best sent in their original state without adding any preservative in a refrigerated storage (4°C) within few hours. But generally it is not possible to send in this ideal state due to lack of good autopsy facilities, cold storage facilities, quick transport arrangements, legal formalities and quick forensic laboratory services. It usually gets delayed. Therefore, sample has to be put in ideal preservatives to provide optimal conditions till they reach the laboratory. The specimen are generally preserved at 4°C during the time until they are analysed. For long term storage it has to be kept in freezer (- 10°C) until analysed and disposed off. The most commonly used preservative for viscera tissues are saturated solution of common salt. It is the most easily available, cheap and effective preservative. It is important that the solution should be prepared using pure sodium chloride in distilled water to avoid any contaminants. The other option is rectified spirit (90% ethanol) except in cases of poisoning due to alcohol, chloral hydrate, chloroform, phenol, formaldehyde, ether, and phosphorus. In acid or alkali poisoning rectified spirit is the prescribed preservative. The blood for toxicological analysis has to be preserved in NaF at the concentration of 10 mg/ml of blood and potassium oxalate, 30 mg/10 ml of blood . Fluoride should be added to urine, vitreous humor if alcohol estimations are required.

### **Forwarding Samples**

All samples should be properly sealed and labelled with the deceased's name, postmortem number, nature of sample, collection site, preservative used, date and time of collection. Particular attention should be paid to the packaging of samples to avoid loss during transport, and to comply with health and safety regulations. It should be protected by the use of tamper-evident seals around the lids, and accompanied by an intact chain of custody record. It should be handed over to the investigating officer after obtaining proper receipt.

The following documents should be enclosed along with the samples<sup>4</sup>:

- I. Name, address and phone number of forensic pathologist and investigating officer.
- II. Circumstances of death and details of drugs thought to be implicated.
- III. Past medical history including current or recent prescription medication.
- IV. Details of emergency hospital treatment and medication given.
- V. Copy of forensic pathologist report if available.

### **Conclusion**

The samples collected during the postmortem may not yield the expected normal results. However much useful information can be obtained by the thoughtful analysis of samples obtained at postmortem examination and the interpretation of results obtained. Most drugs and poisons including alcohol shows variation in concentration<sup>5-8</sup> in blood according to the time of specimen collected after death, choice of specimen site, methods of sampling and the volume of blood collected. The blood specimens taken from central sites e.g. heart tends to give particularly high value for most of the analysts. It is particularly important that blood should not be milked from the limbs as this process can engender significant changes in the concentration of critical analytes in the expressed blood. The most consistent quantitative findings are obtained from blood taken from the femoral vein, which is the recommended site for specimen collection.

Because of the very great variations<sup>12</sup> in the concentration of drugs in blood samples taken from different sites, it is important that sample collection is standardised, so that the results obtained can be meaningfully interpreted by comparison with the databases that are being developed incorporating the results of the analysis of samples of blood collected by a uniform technique at postmortem examinations

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## Review Article

### Cause-of-Death data in public health planning – an overview

*B. R. Sharma\**

#### Abstract

It is well known that more than half of the world's deaths pass by undocumented as to cause<sup>1</sup>. Whilst the appropriate focus of health services may well be the care of the living, consistent and reliable cause-of-death data also constitute a crucial and major resource for health planning and prioritization, and their lack in many settings is a major concern towards filling these data gaps<sup>2,3</sup>.

**Keywords :** *Cause of Death, Public health planning*

#### The Inequalities of Dying

To paraphrase George Orwell, all deaths are equal, but some are more equal than others. In particular, the chance of a death being registered and documented as to its cause depends strongly on the socioeconomic status of the community and nation in which the death occurs, and this is a major obstacle in coming to a meaningful global overview of mortality patterns.

Whilst richer settings have traditionally aggregated physician death certificates and autopsy data as the basis for public health reporting, in poorer circumstances alternative approaches have to be used. Over the last 25 years, these strategies have often involved the so-called “verbal autopsy” (VA)—interviewing relatives and witnesses of deaths and interpreting the interview material to arrive at cause(s) of death<sup>4,5</sup>.

Much VA interpretation has been undertaken by physicians (physician-coded verbal autopsy, PCVA), but this approach makes large demands on limited resources and can be inconsistent over time and place. Much work on VA methodology has concentrated on emulating individual physician death certification, often glossing over the considerable variability and imprecision with which death certificates, the

supposed “gold standard,” are sometimes completed<sup>6</sup>.

Newer approaches using computer models for interpreting VA data are now tending to supersede PCVA, both for populations in general<sup>7,8</sup> and for specific subgroups [9,10], putting more emphasis on cause-specific mortality fractions (CSMFs) than on individual causes.

#### Who Really Needs What?

Methodological advances in cause of death determination have not always been explicit about which gaps in the global data they seek to fill, and this has sometimes led to a confused overall picture. There are different levels at which data on mortality patterns are needed (i.e., from the local to the global) and various ways of meeting these needs could be as shown in Tables 1 – 4.

**Table 1: Who Needs Cause-of-Death Data?**

- |   |
|---|
| <ul style="list-style-type: none"><li>• World Health Organization and national/international bodies</li><li>• Local public health managers</li><li>• Epidemiologists and health services researchers</li><li>• Institutional managers and clinical auditors</li><li>• Medical and legal practitioners</li></ul> |
|---|

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**Table 2: What Kinds of Cause-of-Death Data are needed?**

<ul style="list-style-type: none"> <li>• Global and national cause-specific mortality estimates; ICD coding</li> <li>• Top-ranking causes of death and public health priorities</li> <li>• Relating to specific populations and subgroups</li> <li>• Patterns of deaths within institutions and health care systems Individual causes for particular cases</li> </ul>
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**Table 3: Why Are These Cause-of-Death Data needed?**

<ul style="list-style-type: none"> <li>• Standardized, comparable estimates over time and place</li> <li>• Monitoring trends over time and evaluating public health interventions</li> <li>• Interpreting particular situations in terms of mortality patterns</li> <li>• Monitoring trends over time and within departments.</li> <li>• Following up consequences of individual deaths</li> </ul>
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**Table 4: How Can Cause-of-Death Data be determined without complete Vital Registration?**

<ul style="list-style-type: none"> <li>• Complex models applied to multiple data sources <sup>2,3</sup></li> <li>• Simpler models for coding community-based VAs consistently <sup>7,8</sup></li> <li>• Consistent models for VA coding; may need to be specialised <sup>9,10</sup></li> <li>• Physician certification, medical record reviews, confidential enquiries</li> <li>• Physician certification and/or autopsy</li> </ul>
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Murray and colleagues' new approach for estimating population CSMFs<sup>3</sup> within countries that have existing data on hospital deaths and partial vital registration is a big step forward from simply reporting facility-based data. Although it still depends on the availability of requisite data, it represents an important way forward for understanding mortality in transitional countries, without needing primary data capture.

Researchers have reported a further development in the trend away from PCVA towards more cost-effective and consistent

approaches to VA interpretation, with examples from China<sup>2</sup>. Refinement of VA approaches remains a very important area of methodological development for settings where VA is the only realistic source of cause-specific mortality data, particularly in sub-Saharan Africa. However, applying this more sophisticated approach to VA interpretation globally would still require a large international database of symptom-level sensitivities.

WHO has recently finalized a framework for an internationally standardized approach to VA integrated with the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10)<sup>11</sup>. This new integrated approach is another major contribution at the global level, also making the case for VA-based approaches rather than post-hoc modelling of available mortality data into overall estimates.

It is important here to distinguish clearly between using computer models to interpret case-by-case VA material (on which the widespread future utility of VA depends) and the direct modelling of mortality statistics (which is a second-best approach in the absence of detailed data). WHO's approach should also facilitate comparability between VA and aggregated death certificate data sources; however, ICD coding was not conceived primarily as a public health tool, and it may not be the best means for identifying local public health priorities from cause-of-death data. Furthermore, tools enabling local health managers to readily monitor mortality patterns and identify priorities in their own local areas remain scarce.

## Completing the Picture

Realistically, there will not be universal vital registration and individually based cause-of-death data on a worldwide basis anytime soon, no matter how useful such information might be in public health terms. Therefore a mixed-methods approach will continue to be used, combining data sources that are most appropriate to their particular settings, and meeting needs at different levels.

Basing CSMF population estimates on hospital death data as proposed by Murray et al.<sup>3</sup> is a novel example of using existing data to fill

information gaps. However, as with other approaches, Murray and colleagues' approach is context-dependent (requiring a reasonable proportion of deaths to occur in hospitals). Consistency and comparability are crucial aspects of combining data from a range of sources into a bigger picture, as well as an essential basis for monitoring trends over time. It is likely that further advances in computer models for interpreting cause of death from VAs will contribute by attaining greater accuracy, while inherently avoiding the vagaries of inter-observer subjectivity.

Further thinking on the "cause of death" concept in public health terms, in addition to the traditional medical model, may also lead to helpful advances. For example, if a woman dies as a consequence of prolonged, obstructed labour during a period in which no medical personnel nor ambulance was available at her local health centre, it could be argued that the public health cause was "health systems failure."

The traditional structure of immediate, underlying, and secondary medical causes of death may also be less relevant to public health. More relevant is the concept that a particular death could have been due to two or three alternative causes that are not inter-distinguishable on the basis of the available evidence but can each contribute fractionally to population cause-specific mortality fractions (CSMFs).

## Conclusion

Today's world is a long way from having the comprehensive picture of mortality patterns needed for effective health planning. Further methodological development and wider support for implementing cause-of-death surveillance are still needed at all levels in the developing and poorer parts of the world.

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