



JPAFMAT

A Half-Yearly Publication

Volume 7(1), 2007

Ram Nagar, Banur, Distt. Patiala

Editor-in-Chief: Prof. R.K.Gorea

From Editor's Desk

It is my great pleasure in presenting you the 7th consecutive volume of this journal. Now your prestigious journal is a peer reviewed journal and on the internet map. One of the shortcomings which I visualized was that it was not indexed. For indexing purposes it is required that journal must be published at least twice in a year. You will be glad to know that to overcome this shortcoming now this journal will be published half yearly from this year instead of being published once in a year.

I am very much thankful to the Galaxy Developers, SAS Nagar, Management of Mata Sahib Kaur Nursing School, Dr. KL Garg of Mamta Hospital, Hanuman Garh Junction and Dr. Vinod Dhir of Dhir Eye Hospital, Ludhiana for helping with the funds to bring out this volume of the journal. I am especially thankful to the Dr. AD Aggarwal for providing me constant technical support to continue with the present assignment.

MANUSCRIPT REVIEW PANEL

Dr. Patrick Besant-Matthews, USA
Dr. O.P.Jasuja, Patiala
Dr. V.V.Pillay, Cochin

Ms. Virginia Lynch, USA
Dr. B.R.Sharma, Chandigarh
Dr. Gurjeet Singh, Patiala

ADVISORY BOARD

Dr. E.N. Michalodimitrakis, Greece
Mr. Nirman Arora, Belgium
Prof. F.W. Rösing, Germany
Prof. Calin Scripcaru, Romania
Dr. B.D.Gupta, Jamnagar
Dr. J.Gargi, Amritsar
Dr.A.D.Aggarwal, Mullana

Prof. P. Sema Aka, Turkey
Dr. Ahmet Sadi Cagdir, Turkey
Dr. Z.G. Standing Bear, USA.
Dr. T.D.Dogra, New Delhi
Dr. J.S.Dalal, Chandigarh
Dr. K.Vij, Chandigarh
Dr.A.J.Patowary, Dibrugarh

Editorial

ETHICS IN NURSING PRACTICE

Word ethics is derived from the word "Ethos". It is a Greek word and meaning of this word is customs, character or conduct. It may be related to a person or a profession or a professional body. When we study beliefs and assumptions it is moral philosophy and principles of morality tell us how human beings should behave with each other. In scientific words it is branch of science which deals with morality. Ethics are meant for holistic development of a professional.

Ethics gives the professionals various guidelines that how should they behave with each other, with the public and with governments. These are guideline which the professional should follow when they are dealing with their clients or patients. Ethics also tell the public that what they can expect from a professional and tells the professionals that what the public expects from them. Ethics are needed for every profession so that nobility and respect of that profession remains undiminished.

Nursing is a great profession, giving a healing touch to patients along with taking care of their diseases and maintaining their health. This profession is held in high esteem but this esteem varies in different countries. This difference is not without reasons. In some countries the associations of nurses have their own code of ethics. These associations lay stress on the following of ethical codes. Strict following of the codes in some countries leads to credibility of that profession and esteem of that profession rises automatically. This leads us to believe that there is no alternative to following of the codes of ethics. Ethics are needed both for the nurses as well as the nursing students.

Trained nurses need to respect the dignity of client and respect his cultural and religious beliefs. They are required to give services to their client in a professional and compassionate manner. They are required to maintain confidentiality of matters which they come to know during their professional services. They should respect the professional secrecy. Only under privileged communication they can divulge this information to the courts under protest. While carrying on the treatment of the patients they will take care of their safety as well as their own safety. They will always take the consent of the patient or his guardian before giving any treatment. They should avoid unsafe practices. They will work in a manner that safety of the patients and public is not jeopardized.

Like medical profession newer concepts go on emerging in the nursing practice so they will take care to learn the new things. They have to be trustworthy so that doctors can believe that all the orders will be carried out perfectly well. They will act in team spirit and collaborate with other professionals working in the team for the benefit of the patient. She will not discriminate on the basis of rich or poor or kind of disease. They should not be under the influence of drugs or alcohol when they are working. They will become dangerous to themselves and to the patients. They should respect the treatment policies of the institution where they work. They should be punctual. They should wear proper dress taking care that their body is not unnecessarily exposed while performing their duties. They should address the patient by their name rather than mentioned patient on bed no so and so or patient on trolley number so and so. Human touch should always be maintained and never forgotten. Professional nurse should always be calm even if tired or overworked.

All the above mentioned ethics hold true for the nursing students. Nursing students also require code of ethics because they are coming in contact with the patients and take part in their treatment while pursuing their studies. They will affirm to the idea of life long learning and development of their profession. They will treat others with respect and take care of their religious and cultural beliefs. They should value their human rights. They should work with others in such a manner that highest quality of possible care be given to the patients depending upon the facilities available in a particular set up of a hospital. They should make efforts so that academic staff understands their learning needs. They should not do any thing for which they are not eligible or they do not know. They should not do anything which risks the life of the patient. They should respect the policies of school or college in which they are studying regarding clinical performances and academics. It is the teacher's responsibility to tell the students about ethics. Teachers should follow them first so that they become peer role models so that students can follow them.

Code of ethics should be developed by all the nursing councils or the associations in different countries keeping in view the local customs and traditions as well as those developed by the international associations. All the nurses should be taught these ethics at various stages of their career e.g. entering the schools, while clearing their final exams with ethics as part of the syllabus and when they are entering jobs. They should take a pledge to follow these ethics when they are registering with the nursing councils.

International council of nursing has a code of ethics and every nurse must know the ethics listed in this code and abide by it. In addition to the ethics mentioned in it each country and each state may have own code of ethics and nurses should follow them. The essence of all this is that you should behave to the patients as you will like to be treated if you yourself were a patient. This will solve majority of the problems of ethics. Religiously following the code of ethics will ultimately lead to enhancement of esteem of nursing profession in the public.

Prof. R.K.Gorea

CULPABLE HOMICIDES AND HEAD INJURY

Dr Shilekh Mittal, MD, DNB, Assistant Professor, Department of Forensic Medicine
Dr Sonia Mittal, MD, Assistant Professor, Department of Physiology
MM Institute of Medical Sciences and Research, Mullana (Ambala)
Dr Moneeshindra Singh Mittal, MBBS, Junior Consultant, Mittal Hospital, Faridkot.

Abstract

Homicide means “Killing of human being by another human being”. It is just killing by one who plans the death of another with malice-afore thought; one who looks a purpose to kill but means to inflict serious injury only and the one who acts in want on disregard of human life.

Homicide is the most ‘heinous crime’ prevalent in the society. Homicide is one of the different types of crime and the knowledge of science is being utilized for both its commission and solution. The study was conducted on 200 alleged cases of homicides. The incidence of homicidal deaths was observed as 12.03%. Brain was injured in 34% cases and Head injury was cause of death in 28.5%. Out of different injuries inflict on head and face of dead bodies, 23.33% were abrasions and bruises followed by incised wounds 22.23%. Head injury is the main killer, which warrants more number of neurosurgery centres be set up to save valuable lives.

Key Words: Head Injury, Homicides, Neurosurgical Centres

Introduction

The crime of committing homicide or murder or taking another man’s life wilfully is as old as the existence of man. Viewed in this context it would be seen that homicide was a common practice with the people in ancient Indian as in all other ancient civilization of the world. Revenge, quarrel, anger, jealousy, loss of prestige etc. have been the real motives leading to the worst and most dreaded act of homicide, all over the world through out the ages. Homicide or killing of fellow human being by a man therefore has been a perennial phenomena either in the form of human sacrifices or mass massacres in wars or killing of a particular individual here and there actuated by personal motive whether offensive or defensive. The incidence of homicide has increased at an alarming rate in our country during the period of 1978 to 1982, homicides

constituted from 1.4% to 3.2% of total crime rate. [1]

The culpable homicide can be caused by many ways like; violent asphyxia, thermal injuries, mechanical injuries, firearm injuries, poisoning and starvation. The mechanical injuries are caused as a result of the physical violence. The mechanical injuries are caused by mechanical force, which may be either a moving weapon or object or the movement of the body itself.

The incidence of homicide by the use of all kinds of weapons and instruments weather blunt, sharp or firearm has risen substantially and steadily in the society which results that today hardly a day passes in the life of a Forensic Pathologist working in any of the medicolegal post-mortem centre in the country, when he is not required to face or to do autopsy on the dead body of a victim of homicide. [2]

Homicide by blunt violence can be “Blood less crime” in so far as their external manifestations are concerned e.g. a minor scalp laceration or abrasion may be the sole external injury in the victim of fatal Cranio-Cerebral injury. Blunt impact injuries caused by weapon wielded by an assailant are of great Forensic importance, as the presence of these minor external injuries alone signifies intent. The types of weapon, which have been used to inflict blunt injury, are numerous. [2,3,4,5,6,7,8,9]

Material and Methods

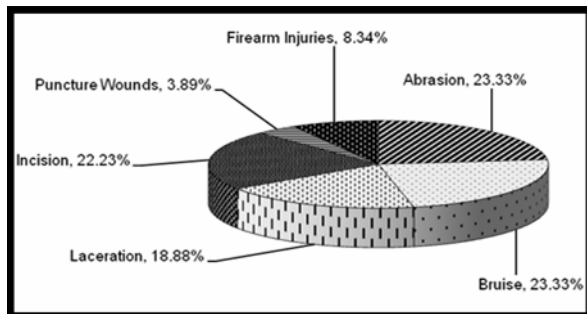
The study consists of all the cases of homicidal deaths which were brought to the mortuary complex of the Department of Forensic Medicine and Toxicology of Govt. Medical College, Amritsar, Punjab (India) during the period from February 2003 to September 2004.

A total of 200 cases of homicidal deaths were studied medicolegal aspects of mechanical injuries in culpable homicides.

Observations

Total number of 1662 cases was brought for the post mortem examination from February 2003 to September 2004 out of which 200 (12.03%) cases comprised of study group.

Figure showing Distribution of Various Injuries on Head and Face



As per figure, out of 180 different types of injuries on head and face, maximum are Abrasions and Bruises 23.33% each.

Table showing Distribution of different types of injuries

Type of Injuries	Sub-type	%
Abrasion	Scratch	23.80
	Graze	59.53
	Imprint	16.68
Bruise	Intra Dermal	14.29
	Subcutaneous	64.29
	Deep Bruise	21.42
Laceration	Split	82.40
	Stretch	8.80
	Tear	8.80
Incisions	Incised Wounds	92.50
	Chop Wounds	7.50
Penetrating Wounds	Incised	71.43
	Lacerated	28.57
Firearm Injuries	Single Perforated LW Caused By Rifled Firearm Weapon	93.34
	Multiple Perforated LW Caused By Smooth Bored Firearm Weapon	6.66

Abrasions present on head and face are Scratch, Graze and Imprint 23.8%, 59.53% and 16.68% respectively. Bruises present on head and face are Intra-dermal 14.29%, Subcutaneous 64.29% and Deep Bruise 21.42%. Lacerations present on head and face are Split, Stretch and Tear 82.4%, 8.8% and 8.8% respectively. Incisions present on head and face are Incised Wounds 92.5%, Chop Wounds 7.5%. Puncture Wounds present on head and face are Penetrating Incised Wound 71.43%, Penetrating Lacerated Wound 28.57%. Firearms Injuries present on head and face are Single Perforated LW caused by rifled firearm weapon 93.34%, Multiple Perforated LW caused by smooth bored firearm weapon 6.66%.

Injury to internal organs in homicidal deaths studied 68 (34%) had brain injury (contusions,

laceration of brain, haemorrhages of brain) and 57(28.5%) died due to head injury.

Discussion

The present study is on 200 autopsy cases of culpable homicide brought for post-mortem examination to the mortuary wing of Department of Forensic Medicine and Toxicology, Government Medical College, Amritsar from February 2003 to September 2004. The present study is conducted and analyzed with special reference to their medicolegal aspects.

The abrasions are present on head and face 23.33%. The reason of more number of abrasions on head and face could be the intentions to inflict injury to vital organ ensuring rapid fatal results. Even fall during scuffle or assault could be another reason for more number of bruises on the head and face. No such studies had been done for comparative analysis.

The bruises are present on head and face 23.33%. As per Gorden and Shapiro (1988) [5] bruises are relatively more marked in tissues overlying bones rather than tissues. Similar observation was noticed in the current study i.e. maximum number of bruises is seen on bony region of head and face.

The other reason of more number of bruises on head and face could be the intentions to inflict injury to vital organ ensuring rapid fatal results. Even fall during scuffle or assault could be another reason for more number of bruises on the head and face. Similar effects have been observed by Vij (2002).

Lacerations are present on head and face 18.88%. Simpson and Knight (1985) [10]

observed the usual site for laceration is the scalp, and face.

The current study is in line to the observation made by Simpson and Knight (1985). Again like bruises, head and face was the usual region in homicidal assaults, where the injuries are inflicted with intention to murder by inflicting serious injury to brain.

Incisions are present on head and face 22.23%. Gorden and Shipiro (1988) [5] observed the incised wounds are commonly seen in cases of homicidal assault. Homicidal incised wounds are usually multiple and can occur in any region of the body. If in a case of homicidal wounding, the victim tried to defend himself by warding off blows or by grasping the weapon. Wounds on top of head are homicidal. In the present study similar findings are observed majority of incisions are on head and face. This could be out of revenge to disfigure the face or to conceal the identity by deforming head and face. As head contains the most vital organ, the brain, so any injury to head will be fatal is well known fact to the assailant.

The puncture wounds are present on head and face 3.89%. The reason of less number of puncture wounds on head and face could be, as chest and abdomen are favoured sites of puncture wounds than head and face. No such studies had been done for comparative analysis.

Firearm injuries are present on head and face 8.34 %. Kanger et al (2002) [11] observed that main target was head 33.1%. Present study is in variance from study of Kanger et al (2002) who observed main target in firearm injury was head.

Distribution of various types of injuries on head and face is depicted in figure; maximum injuries

are abrasions and bruises 23.33%, incisions 22.23%, lacerations 18.88%, firearm injuries 8.34% and puncture wounds 3.89%. The reasons for more number of abrasions and bruises could be as a result of injuries by blunt weapons, or as a result of fall after receiving the injury. No such study had been done for comparative analysis.

Distribution of injury to various internal organs in the present study is cases of internal injury to brain 34%.

Dasgupta and Tripathi (1983) [12] in their observation found incidence of internal injuries head and neck in 31.18%; they observed brain as main victim of homicidal assault. This is in line to current study.

Tonsayanond (1984) [13] observed that brain in 22.01% of victim are injured.

Summary

This study was base on the observation of 200 cases of culpable homicidal deaths, brought to the mortuary of the Department of Forensic Medicine, Govt. Medical College, Amritsar, Punjab, India, for medicolegal post-mortem examination during the period from February 2003 to September 2004. The salient observations that have emerged out of this study are as follows:

- i. The incidence of homicide was 12.03%.
- ii. Maximum Abrasions and Bruises 23.33% are present on head and face.
- iii. Lacerations present on head and face are 18.88%
- iv. Incised wounds present on head and face are 22.23%

- v. In homicidal deaths brain is injured in 34% cases.
- vi. Head injury was the cause of death in 28.5% cases.

Conclusion

Head injury is the main killer, which warrants more number of neurosurgery centres be set up to save valuable lives. Police patrolling for early detection of crime and shifting of injured to the hospital/critical care centre and provision of prompt ambulance service by state/private hospital or NGOs for medical care is another aspect, which may decline mortality due to such crimes.

References

1. Saharan DV, Tripathi AK, Chandra J, Dogra TD. A study of murders in South Delhi. J For Med Tox 1988; 3 & 4: 12-5.
2. Mant AK. Taylor's Principles and Practice of Medical Jurisprudence. Wounds and their interpretation. 13th ed. London: Churchill Livingstone; 1984. p. 214-248.
3. Camps FE. Gradwohl's Legal Medicine. Wounds and Trauma. 3rd ed. Chicago: John Wright and Sons Ltd Publications; 1976. p. 255-299.
4. Subrahmanyam BV. Modi's Medical Jurisprudence and Toxicology. Injuries by mechanical violence. 22nd Ed. New Delhi: Butterworths India; 2001. p. 333-360
5. Gordon I, Shapiro HA, Benson DS. Forensic Medicine A Guide to Principles. Wounds. 3rd Ed. New York: Churchill Livingstone; 1988. p. 221-251.

6. Nandy A. Principles of Forensic Medicine. Mechanical injuries. 2nd ed. Calcutta: New Central Book Agency Pvt. Ltd; 2000. p.209-262.
7. Vij K. Text Book of Forensic Medicine and Toxicology Principles and Practice. Injuries by blunt force. 2nd Ed. New Delhi: B I Churchill Livingstone Pvt. Ltd; 2002. p. 400-423.
8. Reddy KSN. The Essential of Forensic Medicine and Toxicology. Mechanical injuries. 21st ed. Hyderabad: Om Sai Graphics; 2002. p. 148-201.
9. Parikh CK. Parikh's Textbook of Medical Jurisprudence. Forensic Medicine and Toxicology. Mechanical injuries. 6th Ed. New Delhi: CBS Publishers and Distributors; 1999. p. 4.1-4.25
10. Simpson K, Knight B. Forensic Medicine. Types of injuries and wounds. 9th ed. London: Butler and Tanner Ltd; 1985. p. 48-70.
11. Kanger B, Billeb E, Koops E, Brinkmann B. Autopsy features relevant for discrimination between suicidal and homicidal gun shot injuries. Int. J Legal Med 2002; 116: 273-8
12. Dasgupta SM, Tripathi CB. A study of the homicide cases occurring in Varanasi area. Indian Medical Gazette 1983; 285-8.
13. Tosayaround S. Homicide: A study at Siriraj Hospital, Bangkok. Med Sci Law 1984; 24: 3: 222-6.

PALMAR AND DIGITAL DERMATOGLYPHICS IN CONGENITALLY DEAF SUBJECTS

Dr Anu Sharma, Assistant Professor,
Dr Poonam Singh, Professor & Head,
Dr Veena Sood, Professor,
 Department of Anatomy, Dayanand Medical College & Hospital, Ludhiana, Punjab, India.
 Email: anuashwani2003@yahoo.com

Abstract

Development of dermal ridges and congenital deafness seems to be interlinked as they develop at around the same time. Hence, a study was devised to compare the dermatoglyphic patterns in established congenitally deaf cases with that of control healthy individuals. The study was conducted at Dayanand Medical College and Hospital, Ludhiana, Punjab, India. One hundred subjects with congenital deafness and mutism and a control group of fifty subjects with normal hearing having similar sex distribution were selected. The dermal patterns of finger tips, hypothenar area, thenar area, all interdigital areas of both hands, total number of tri-radial angles of both palmar areas, 'atd'- angle, total ridge count and presence or absence of simian crease were noted with the help of magnifying hand lens. Patterns distribution on right hand fingertips of deaf males showed statistically significant difference ($p < 0.05$). The difference in number of whorls in deaf males and control groups was observed as statistically significant. The various patterns frequencies in the deaf and control male groups for right hand's hypothenar area showed statistically significant difference ($p < 0.05$). In particular, frequency of arches (carpal) was found more in deaf of both sexes in the hypothenar area. The pattern frequencies in III interdigital area of right hand of deaf males were statistically higher than normal hearing males. In left hand of deaf females, patterns frequencies in III interdigital area were higher than normal hearing female group. This difference was found to be statistically highly significant ($p < 0.01$). The pattern frequencies in IV interdigital area in the left hand of deaf males was also statistically more as highly significant when compared with control group ($p < 0.01$). The incidence of simian crease was noted to be higher in the left hands of deaf in both sexes, and 'mean' ridge count was less in the deaf as compared to controls, but it was not statistically significant. These criteria by themselves are not enough to diagnose deafness by birth, but they can definitely be used for screening the population at large.

Key words: dermatoglyphic, congenital deafness, pattern distribution, hypothenar area, thenar area, interdigital area

Introduction

It is estimated that about 50% of cases of childhood hearing impairment of moderate to profound degree are genetically determined. A child with a parent having familial deafness is at risk for hearing impairment [1,2]. Familial

deafness can be dominant, recessive, or X-linked. Agenesis or malformations of cochlear structures are genetic causes of congenital sensorineural hearing impairment [1]. Recessive transmission accounts for 90% of genetic congenital deafness. Other causes of congenital deafness are factors that affect the ear during

pregnancy or shortly after birth, such as rubella and cytomegalovirus, anoxia and hyperbilirubinemia [3].

Development of dermatoglyphic patterns is also under genetic control. The similarity in patterns is more in monozygotic twins than in dizygotic [4]. The totality of pattern characteristics is not transmitted. Moreover, the development of internal ear (5 weeks to 12 weeks approximately) exactly coincides with the development of dermal patterns. The vast majority of patients with congenital deafness have no demonstrable structural anomaly of the ear. One half of the patients with congenital deafness have no identifiable cause either [3]. It is often not until children are in preschool and kindergarten that hearing impairment is identified. Hearing impairment can have a major impact on the social and emotional development, behaviour and academic achievement; the earlier the impairment is identified the better is the prognosis. Data from the Colorado new born screening program suggest that if congenital deafness is identified and treated by the age of six months, they would develop the same level of language as their age matched peers who are not hearing impaired [5].

The currently available tests range from simple distraction test (like clapping of hands and other sound test), free field audiometry, auditory brainstem evoked responses. On one hand where simple tests are non-conclusive, unreliable and partially requiring patient's active co-operation, the sophisticated tests require trained personnel thus precluding its frequent use for mass screening. Therefore, the need for a simple non-expensive screening test has been long felt.

In the third world countries with high load of population, the simplicity of dermatoglyphic technique and its inexpensiveness warrants its continued evaluation as a screening tool. When combined with other clinical and investigative features dermatoglyphic study can serve to strengthen a diagnostic impression and can be advocated as a useful screening device.

Material and Methods

The study was conducted in the Department of Anatomy and Otolaryngology, Dayanand Medical College and Hospital, Ludhiana, Punjab, India. One hundred subjects with congenital deafness and mutism and a control group of fifty subjects with normal hearing having similar sex distribution were selected. Consent was taken from the patients and the guardians wherever it was necessary. The study was passed by the hospital ethical committee. Detailed clinical examination was done to exclude any other congenital diseases. Examination of ear, nose and throat was undertaken to rule out any other local abnormality. Routine tuning fork tests and pure-tone audiometry was done wherever necessary.

For recording of prints, "printer's ink and paper method" was used. Both hand and finger prints were taken and labelled accordingly. The proforma along with all the demographic particulars was duly filled for each subject and control for final analysis. Statistical analysis was done using chi-square test, t test and Z test.

Interpretation of prints

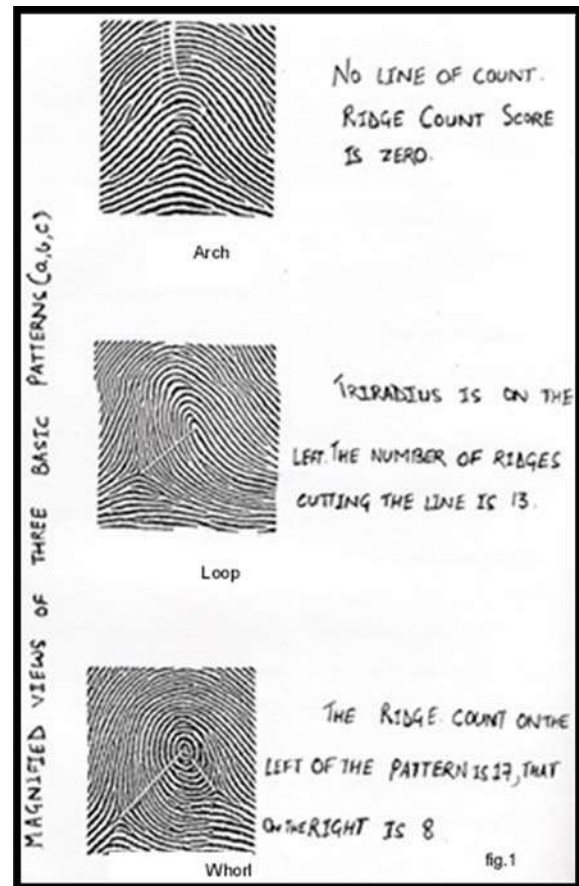
The following points were noted with the help of magnifying hand lens:

1. Dermal patterns of finger tips.

2. Dermal patterns of hypothenar area and thenar area of both hands
 3. Dermal patterns of all interdigital areas of both hands.
 4. Total number of tri-radii of both palmer areas.
 5. 'atd'- angle on both palmer areas.
 6. Presence or absence of simian crease.
 7. Total ridge count.
3. Open Fields (O): These are configurations in which the ridges are essentially straight, and therefore, form no patterns.
 4. Vestiges (V): They lack the sharp recurvature of ridges which distinguish true patterns. It is merely a local disarrangement of ridges.
 5. Pattern Intensity: This is the number of triradii on all the ten fingers of an individual. The value ranges from zero to twenty.

Classification of Dermatoglyphics [6,7]:

1. Triradius: A triradius is located at the meeting point of three opposing ridge system. This marks the edge of the loop pattern (Fig.1).
2. Patterns:
 - i. Arch: The ridges pass from one margin of the digit to the other with a gentle, distally bowed sweep. There is no triradius (Fig. 1).
 - ii. Loops: It possesses only one triradius. The ridges curve around only one extremity of the pattern, forming the head of the loop (Fig.1). Loops may further be of two types:
 - i. Ulnar loop: When the loop opens to the ulnar margin.
 - ii. Radial loop: When the loop opens to the radial margin.
 - iii. Whorl: It is distinguished by concentric design. The majority of the ridges make circuits around the core. True whorls typically possess two triradii (Fig. 1).

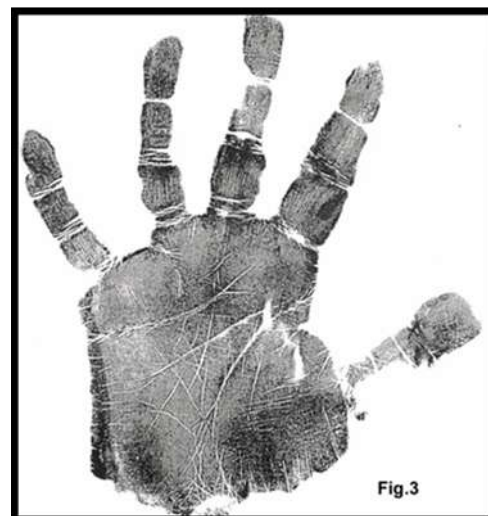


6. Ridge Count: These are made from triradii point to point of core. After locating the triradii point and point of core, as outer and inner termini of the count, the line is set in position to connect them (Fig. 1). The count on the ten fingers of each individual is then

summed up to give a single value, the total ridge count.

7. Palms: Interdigital intervals, the clefts between digits, are numbered in sequence beginning with the interval between the thumb and index finger. The palmer surface is divisible into dermatoglyphic areas or configurational fields, which are hypothenar, thenar and the four interdigital areas numbered I to IV. Each area is a topographic unit, and there is in some palms a discrete pattern and partial boundaries formed by triradii and their radiants for each area. Characteristically there are four 'digital triradii' located in proximal relation to the bases of digits II, III, IV and V. In radioulnar sequence they are named a, b, c and d. Axial triradius (t) is located at or near the proximal margin of the palms, in the interval between thenar and hypothenar eminences.
8. Classification of Palmer Flexion Creases: The main flexion creases- distal transverse, proximal transverse and radial longitudinal- are classified by their common point of origin as single radial base crease (SRBC) (Fig. 2), double radial base crease (DRBC) (Fig.3) or triple radial base crease (TRBC) (Fig. 4). The double radial base crease can be further divided into two groups on the basis of its distal and proximal positions.
9. Hypothenar Patterns: There are three primary true patterns in the hypothenar area: whorls, loops and tented arches. The Other patterns like plain arches, open fields, multiplications and vestiges are not true patterns. True whorls have concentric ridges, but three triradii instead of two, and are designated as 'W'. Hypothenar loops have three instead of two directions of

opening: the radial margin, the ulnar margin, the proximal (carpal) margin.





are fused to form a single horizontal crease. This line is designated as simian crease.

Observations

1. **Fingertip patterns:**

Pattern distribution in right hand fingertips of deaf males showed statistically significant difference ($p < 0.05$), compared with control population (table 1). Whorls and arches were more in the left hand in the deaf than controls, but it was not statistically significant. In females higher frequency of loop radial and arches was noted in the deaf (left hands and both hands considered together), but it was not found statistically significant.

When fingertips of both the hands of both sexes were taken together, it showed no significant difference ($p > 0.05$) than control population (table 2). The frequency of whorls was more in deaf group. The difference in number of whorls in deaf males and control groups was observed as statistically significant (table 3).

- 10. **Thenar or First Interdigital Area:** The configurations of thenar and I interdigital areas are closely related anatomically.
- 11. **Second, Third and Fourth Interdigital Areas:** The configurational area lying between digital triradii 'a' and 'b' is interdigital II, that between triradii 'b' and 'c' is interdigital III, and area between triradii 'c' and 'd' is interdigital IV. The configuration may be a true pattern (whorl or loop), a vestige or an open field.
- 12. **'atd' Angle:** It is formed between lines drawn from the triradii at the bases of the index and little fingers to the axial triradius. The more distal the axial triradius, the larger is the angle. Positions of the axial triradii forming angles greater than 56° are designated 'distal'. If more than one axial triradius is present, the most distal one is used in the analysis.
- 13. **Simian Line:** Usually three flexion creases are present on the palm. In some cases however, the two distal horizontal creases

Table 1: Pattern distribution on fingertips of males

Type of pattern	Right hand*		Left hand**	
	Control	Deaf	Control	Deaf
Whorls	56	149	59	132
Loop (Ulnar)	80	113	76	131
Loop (Radial)	1	9	4	6
Arches	3	9	1	11

Table 2: Pattern distribution on fingertips of both hands

Type of pattern	Males		Females	
	Control	Deaf	Control	Deaf
Whorls	115	281	87	164
Loop (Ulnar)	156	244	109	231
Loop (Radial)	5	15	1	6
Arches	4	20	13	39

Table 3: Frequency of whorls and arches on fingertips

	Whorls		Arches	
	Males	Females	Males	Females
Control	115	87	4	13
Deaf	281	164	20	39
Values after Z-test	2.49	0.57	1.76	1.33
Z-test	(s)	(n.s.)	(n.s.)	(n.s.)

n.s. - not significant ($p > 0.05$), s - significant ($p < 0.05$)

2. Hypothenar area

In males, some pattern frequencies were more in deaf population than controls in right hand fingertips. The frequency of arches (carpal) in deaf was more (table 4). The difference in controls and deaf was statistically highly significant ($p < 0.01$) (table 5). In females, the frequency of arches (carpal) in deaf was more (table 4). The difference in controls and deaf was statistically significant ($p < 0.05$).

Table 4: Pattern frequencies in hypothenar area in males

Type of pattern	Left hand		Right hand	
	Controls	Deaf	Controls	Deaf
Loop (ulnar)	11	8	7	5
Loop (radial)	5	9	1	8
Loop (carpal)	0	0	0	0
Open Field	13	25	17	21
Arches (carpal)	1	17	3	22
Whorls	0	0	0	1
Vestiges	0	0	0	1

Table 5: Pattern frequency of arches on hypothenar area on both hands

	Males	Females
Controls	4	3
Deaf	39	21
Values after Z-test	3.88 (h.s.)	2.39 (s)

s - Significant ($p < 0.05$), h.s - highly significant ($p < 0.01$)

3. III Interdigital area

The number of pattern frequencies in deaf male was more in right hand than controls (75% vs. 36.4%) which was statistically highly significant. Regarding overall pattern frequencies, the number of deaf with patterns were more than controls (41.96% vs. 21.43%) which was statistically highly significant ($p < 0.01$) (table 7).

In left hand of deaf females, patterns were 42.9% and in controls 10.7%. The difference was statistically highly significant ($p < 0.01$) (table 6). Overall pattern frequencies in the deaf were more than controls which was statistically highly significant ($p < 0.01$) (table 7).

4. IV Interdigital area

The pattern frequency in left hand of deaf males was more than controls (table 6). The difference was statistically highly significant ($p < 0.01$). Overall pattern frequencies of deaf males were greater than controls which was statistically highly significant ($p < 0.01$) (table 7).

Table 6: Pattern frequencies in III and IV Interdigital area

	III Interdigital area				IV Interdigital area			
	Males		Females		Males		Females	
	Right	Left	Right	Left	Right	Left	Right	Left
Control	8	4	9	3	9	6	6	5
Deaf	33	14	25	24	25	36	14	19
Values after Z-test	3.05 (h.s.)	1.13 (n.s.)	1.22 (n.s.)	2.97 (h.s.)	1.22 (n.s.)	3.70 (s)	0.38 (n.s.)	1.54 (n.s.)

s- Significant ($p < 0.05$), h.s. - highly significant ($p < 0.01$), n.s. - not significant ($p > 0.05$)

Table 7: Overall pattern frequencies

	III rd Interdigital area		IV th Interdigital area	
	Males	Females	Males	Females
Control	12	12	15	11
Deaf	47	49	61	33
Values after Z-test	2.63 (h.s.)	3.09 (h.s.)	3.40 (h.s.)	1.44 (n.s.)

h.s. - highly significant ($p < 0.01$), n.s. - not significant ($p > 0.05$)

In deaf females, frequency of pattern was more than controls but it was not statistically significant.

5. Simian crease: The incidence of simian crease was noted to be higher in the left hands of deaf in both sexes, but it was not significant statistically (table 8).

Table 8: Frequency of typical Simian Crease

	Males		Females	
	Right	Left	Right	left
Control	1	0	0	0
Deaf	1	5	1	2
Values after Z-test	0.51 (n.s.)	1.63 (n.s.)	0.71 (n.s.)	1.01 (n.s.)

n.s. - not significant ($p > 0.05$)

6. Ridge count: In both sexes, 'mean' ridge count was less in the deaf as compared to controls, which was not significant statistically.
7. Palmer flexion crease: Triple radial base crease (TRBC) was higher in the deaf than

controls in both sexes. But the difference was not statistically significant.

Discussion

The pattern distribution on fingertips of right hand in males shows significant difference, when compared with controls. The frequency of whorls was more in the deaf cases of both sexes. Alter and Schulenberg [8] also noted such association in patients with rubella syndrome, who had congenital deafness as one of the features. Comparing the entire fingertip patterns the present study shows no statistically significant difference in both sexes. Similar findings were found by Dar et al [10] and Amla et al [11]. In the present study the frequency of arches was more in the females in normal as well as the deaf population which coincides with earlier work by Verbov [12].

In the hypothenar area, the pattern frequencies in the right hand of deaf and control males show a statistically significant difference. Alter and Schulenberg [8] also noted a higher percentage of patterns only on the right hand. Though the increased frequency of hypothenar patterns was not showing statistically significant difference in the left hand of males and both hands of females, in both the groups, the increased frequency of hypothenar pattern was evident. This conforms to the work done by Turpin et al [13]. The incidence of arch carpal

pattern on hypothenar area was found to be statistically significant in both the sexes in the deaf group. Athanikar also observed higher incidence of arch carpal pattern on both hands in the deaf cases [9].

In our study, the deaf group in both sexes showed higher percent of patterns in the thenar area bilaterally but were of no significance statistically. Alter and Schulenberg [8] also noted higher percentage of patterns in thenar area bilaterally but Amla et al [11] found no difference in thenar area pattern frequencies in both the deaf and normal groups.

The pattern frequency in 2nd interdigital area in the deaf group showed very insignificant difference with the control group. Amla et al [11] also found the same trend. But Alter and Schulenberg [8] found significant pattern frequency difference between affected and normal individuals.

The 3rd interdigital area of right hands in females showed more patterns. This difference when compared with controls was statistically insignificant (56.8% in the deaf with 40.9% in controls). The patterns in the left hand of the deaf females were significantly more than controls. The pattern frequencies difference in corresponding area in the right hand deaf male and controls was statistically significant (75% vs. 36.36%) whereas it was statistically insignificant in left hand. The studies conducted by Amla et al [11] and Pfeiffer and Kapferer [14] did not note this difference in frequency of patterns between the deaf and control groups in either sex.

The percentages of pattern frequencies in 4th interdigital area in the deaf group in either sex were more in the right and left hands when considered together and separately. But

statistically significance was seen in the study of left hands only in the deaf male group (64.29% vs. 21.43%). The present study neither agreed with Alter and Schulenberg [8] where significant difference of patterns only on the right side was found, nor with Amla et al [11] and Pfeiffer and Kapferer [14] who noted no pattern differences in the deaf and control groups.

There was no difference in the total number of tri-radii of both palmer areas in control and the deaf of either sex. Hence, it was not corresponding with the findings of Athanikar [9] who observed a difference of number of tri-radii of both palmer areas in the controls and deaf groups.

Comparing the two hands separately the value of 'atd' angle was more or less similar in both the groups in either sex. Amla et al [11] and Cascos et al [15] analyzed 'atd' angle in the congenitally hearing impaired patients with those of controls. They found no statistically significant difference in the reading. The 'atd' angle in both hands in either sex was noted to be less than 45° in the present study. Mean of summed 'atd' angles in deaf males was 39.89° and 39.98° in the right and left hand respectively. This conforms the finding of Athanikar [9] who found value of less than 40° in the deaf children. In contrast, the deaf females showed slightly higher value of mean 'atd' angle in both hands i.e. 40.5° and 40.11° in the right and left hand respectively. Mean summed 'atd' angle was more than 40° in control cases in both hands of female which again corresponded with the work of Athanikar [9]. Thus the present study of 'atd' angle matched with the results of Dar and Winter [10] and Amla et al [11] in showing statistically insignificant results, it was not compliant with the findings of Achs et al [16] and Alter and

Schulenberg [8]. They showed higher incidence of distal axial tri-radial pointing towards wider 'atd' angle in rubella damaged patients with deafness as one of the features.

There was no statistically significant difference in frequency of typical simian crease in both the hand of either sex in control and deaf cases. Some earlier work on the congenitally deaf cases also did not show any significant correlation between the deafness and simian crease (Turpin et al. [13], Dar et al. [10], Amla et al. [11]). The present study showed increased frequency of typical simian crease in the deaf group as compared to controls. But the difference was statistically insignificant which was in contrast with the study of Achs et al [16] and Alter and Schulenberg [8]. They noted high incidence of typical simian lines in the rubella damaged group with congenital deafness as one of the manifestations.

The ridge count noted on fingertips of right and left hands separately in either sex showed higher value in controls as compared to the deaf cases. But the difference in both groups was statistically insignificant. The total ridge count on fingertips in the deaf males showed mean value of 119.5 and control cases 128.43. These findings more or less were in affirmation with Athanikar [9]. He noted total ridge count as 111 in the deaf group and 131 in the control group. Thus there was obvious difference in the total ridge count in the both the groups. But this difference was statistically insignificant. Amla et al [11] also did not find any significant difference in total ridge count in the congenitally deaf and normal population. The deaf females also showed lower value of mean total ridge count as compared to controls, but it was statistically insignificant. Hence, the present study supported Athanikar's work

which found that the total ridge count was definitely less in the deaf patients than controls [9].

The pattern distribution of palmar flexion creases did not show statistically significant difference in both the deaf and control groups in either sex. But the TRBC pattern showed greater incidence in the right and the left hand of deaf females (13.6% and 9.09% respectively) as compared to total absence of TRBC in the control group of females.

There was no statistically significant difference in the pattern intensity in controls and deaf of either sex. The 'mean' of pattern intensity is slightly higher in the deaf than controls in male population. This was just converse in the females. No researcher has reported work on this aspect of dermatoglyphic in congenital deafness till date.

No worker has so far tried to see whether any relationship exists when all areas are taken together, rather than each one individually. In the present study in an effort to outline a deaf palm all the areas in the palm were studied together. It was seen that the differences were not statistically significant in both the deaf and control groups in either sex. Hence, different areas in the palm should be studied separately. They are better dermatoglyphic indicators than all these areas when considered together.

Conclusions

The overall trend of the fingertip pattern showed increased number of whorls in the deaf. Hypothenar patterns, III and IV interdigital areas and TRBC can also play a definite role as a dermatoglyphic indicator of congenitally deaf patients.

When a subject shows the above dermatoglyphic features then the likelihood of a case of congenital deafness may be suspected and such a person should be subjected to further clinical tests. These criteria by themselves are not enough to diagnose deafness by birth, but they can definitely be used for screening the population at large.

Caveat

Many findings reported did not prove to be statistically significant possibly because of the small number of cases studied. A study involving a larger group of affected population is indicated to concretely outline the changes.

References

1. Bluestone CD, Nozza RJ. The ear. In: Behrman RE, Kliegman RM, Nelson WE, Vaughan III VC (Eds). Nelson Textbook of Paediatrics. 14th ed. WB Saunders: Philadelphia, 1992 p.1602.
2. Maran AGD. Logan Turner's diseases of the Nose, Throat and Ear. KM Verghese Company: Mumbai, 1988
3. Rudolph AM, Hoffman JIE, Rudolph CD, Sagan P. Rudolph's Paediatrics. Prentice-Hall International Inc.: London, 1991
4. Rife DC. Genetic studies of monozygotic twins: A diagnostic formula. Jour Heredity 1933; 24: 339.
5. Margaret K. The ear. In: Behrman RE, Kliegman RM and Jenson HB (Eds). Nelson Textbook of Paediatrics Vol II. 16th ed. WB Saunders: USA 2000.p. 1942-43
6. Cummins H, Midlo C. Fingerprints, palms and soles: An **Introduction** to dermatoglyphics. Dover Publication Inc.: New York, 1961.
7. Bali RS and Chaube R. On the formulation of palmer creases. Z Morph Anthrop. 1971; 63: 121-30.
8. Alter M, Schulenberg R. Dermatoglyphics in the rubella syndrome. JAMA. 1966; 197 (9): 685-688.
9. Athanikar KA. Dermatoglyphics in deaf-mute—an early diagnostic tool. Indian Journal of Otolaryngology. 1986; 38 (1): 1-5.
10. Dar H, Winter ST. A study of dermatoglyphics and the simian crease in familial deafness. Human Heredity 1970; 20(5): 493-506.
11. Amla I, Gopalakrishna GS, Mruthyunjaya GT, Rajalakshmi D. Dermatoglyphics in children with congenital hearing loss. Indian Pediatrics 1972; 9 (7): 384-386.
12. Verbov JL. Dermatoglyphics in early-onset diabetes mellitus. Human Heredity. 1973; 23(6): 535-542.
13. Turpin R et al. Etude dermatoglyphique de 302 sourds-mutes. Ann Genet.1967; 10: 146-149
14. Pfeiffer RA, Kapferer L. Sensorineural deafness, hypospadias and synostosis of metacarpals and metatarsals 4 and 5: A previously apparently undescribed MCA/MR syndrome. Am J Med Genet 1988; 31: 5-10.
15. Cascos AS, Sanchez-Harguindey L, and Rabago PD. Cardio-auditory syndromes. Cardiac and genetic study of 511 deaf-

mute children. Brit Heart J 1969; 31 (1): 26-33.

rubella embryopathy. New Engl JMed.1966; 274 (3): 148-150.

16. Achs R, Harper RG and Siegel M. Unusual dermatoglyphic findings associated with

MEDICAL WITNESS & THE INDIAN COURTS

Dr. A.D.Aggarwal, Assistant Professor, Forensic Medicine, M.M. Medical College, Mullana, Ambala
Dr. Harnam Singh, Assistant Professor, Forensic Medicine, M.M. Medical College, Mullana, Ambala
Dr. R.K.Gorea, Professor & Head, Forensic Medicine, Gian Sagar Medical College, Ram Nagar, Banur

Abstract

In our practice it has been seen that the doctors are generally afraid to testify in the courts. This is mainly because of two reasons: one that they are not familiar of the legal procedures and two because they are afraid to be grilled in the court by the lawyers. As a result many a times the attitude of the doctor while testifying in the court is to finish the testimony and go back, irrespective of the outcome. The beneficiaries in such cases are the culprits who have to be acquitted because of lack of evidence. As a result the knowledge, skill, education, experience and training of the doctors are necessary to make them more competent while testifying in the court.

Key words: Medical Witness, court, legal system

Introduction

Medical evidence is routinely required for administration of justice all over the world. As an expert witness, the doctor can be thrust, often unwillingly, into a foreign environment where the flow of information is tightly controlled by complex rules of evidence which have been shaped by various laws with which the expert witness cannot expect to be familiar. It is a common perception among Indian medical professionals that lot of time and effort is required for expert testimony in the court of law in our country. Thereby, large numbers of professionals avoid sharing medicolegal responsibilities.

The legal system

The two dominant legal systems in the world are often referred to as the adversarial and inquisitorial systems. The objective is just resolution of disputes and maintenance of social order. In the inquisitorial system the court and the judiciary plays a proactive part

and is involved in the examination and questioning of witnesses. The adversarial system being followed in India is based on the philosophy that the true facts of a given situation, and hence justice, will emerge if the parties to a court action act as adversaries rather than cooperative participants. Each side vigorously advances its own version of the facts, an impartial third person or group of persons (judges) will sift out the truth.

Since the jury were thought to be influenced by media and public support for the parties and is also open to being misled, the Indian government abolished jury trials after the case *K.M.Nanavati vs. State of Maharashtra* in 1959.

The presiding officer or the judge sits in his chair at a higher platform; besides him on his sides at a lower level were the reader and the clerk. The court staff includes head clerk (*mukhya sahkik*), administrative clerk (*nazir*), readers (*peshkars*), stenographers (*stenos*), record keepers (*almads*) and orderlies (peons).

Clients (*muakkils*) are present with their lawyer (*vakil*) accompanied by his scribe (*munshi*) in the courts (*kacheri*). [1]

The Supreme Court of India is the highest judicial tribunal of the country. It has power of supervision over all courts and the law declared by it, is binding on all courts. [2] The High Courts are the highest judicial tribunal for the states. These are the courts of appeal. Sessions Courts are the highest judicial tribunal of the districts. These can pass any sentence. The lower courts are the Magistrate Courts. There are also special courts like Juvenile Courts and Fast Track Courts.

Presentation of evidence

After receiving summons or subpoena [3] the expert witness must appear before the court at the appointed time with the relevant documents. The evidence is probed for areas of uncertainty, inconsistency or any factors which may make the evidence appear unreliable. Evidence is presented in a systematic order.

1. Oath (s. 51 Indian Penal Code)
2. Examination-in-chief (direct examination, no leading questions allowed, s. 137 Indian Evidence Act)
3. Cross-examination (leading questions permitted, s. 141-146 Indian Evidence Act)
4. Re-examination (Re-direct examination, s. 138 Indian Evidence Act)
5. Court questions (questions by judge, s. 165 Indian Evidence Act, s. 311 Criminal Procedure Code)

The recorded deposition of witness is handed over to him, which he carefully goes through, and signs at the bottom of each page, and on

the last page immediately below the last paragraph; and initials any corrections (s. 278 Criminal Procedure Code). The witness shall not leave the court without the permission of the judge.

Expert Witness

An expert witness is defined as a person especially skilled in foreign law, science or art, etc. who helps the court in forming opinion on that point. (Indian Evidence Act 1872 section 45). An expert witness, by virtue of education, profession, publication or experience, is believed to have special knowledge of his subject beyond that of the average person, sufficient that others may officially and legally rely upon his opinion. In general, witnesses may only give evidence of fact and not an opinion. An expert however, is permitted to offer his opinion as evidence.

Typically, experts are relied on by both sides to a dispute for opinions. The objective of the expert witness is to support the proper administration of justice and the early resolution of dispute through fair and unbiased expert evidence.

Government Scientific Experts as per Code of Criminal Procedure 1973 Section 293 (4) are

- a) Chemical Examiner or Assistant Chemical Examiner
- b) Chief Controller of Explosives
- c) Director of Finger Print Bureau
- d) Director Haffkeine Institute Bombay
- e) Director, Deputy Director, Assistant Director of central or state FSL
- f) Serologist to Govt.

g) any other Government scientific expert specified by notification, by the Central Government

Expert medical evidence

The term evidence has different meanings in law and medicine. In law, evidence is material or testimony which is admissible to the court. In medicine, it refers to data obtained through scientific investigation. The quality of such evidence is defined by the scientific methodology employed in the investigation. [4,5,6] In law, complex rules restrict the type of evidence that may be presented to the court. [7] These rules aim to exclude evidence which may be unreliable, irrelevant or misleading and include evidence which has the maximum probability of being the truth.

Medical evidence helps the courts to draw logical conclusions from the facts presented. The evidence presented by medical experts is based on their opinions derived by their specialized skills acquired by study and experience. [8] Medical experts are routinely involved in the administration of justice particularly in criminal courts. In India, ordinarily medical evidence is admitted only when the expert gives oral evidence under oath in the courts of law expect under special circumstances like:

- i. When evidence has already been admitted in a lower court;
- ii. Expert opinions expressed in a treatise;
- iii. Evidence given in a previous judicial proceeding;
- iv. Expert cannot be called as witness; and

v. Hospital records like admission/discharge register, birth/death certificates etc.

Judges are assumed to possess knowledge and experience of general fields of human endeavour and experience. Experts may not provide evidence regarding matters of 'common knowledge'. There are several areas of medicine which intersect with day to day life and therefore invoke the common knowledge rule. An expert need not be asked to number the fingers on the hand.

The expert witness may only testify within his or her area of expertise. It is left to the judiciary to rule on whether an area of scientific or medical knowledge represents an area of expertise. [9] Critics point out that judges with limited medical knowledge may not be the most appropriate 'gate keepers' of scientific evidence in relation to the court. [10] The Frye test [11] rules that in order to be classified as an area of expertise, the area must be sufficiently established to have gained general acceptance in the particular field to which it belongs. [12] The Daubert ruling has further specified the criteria to determine the admissibility of scientific evidence. [13]

The expert must be able to clearly justify his opinion on the basis of facts using his expertise, describing how he was able to reach at the opinion using any documents, books, photos etc.

Limitations and problems of evidence from the expert witness

There are many instances where court decisions contrary to popular expert opinion on issues like bone cut, rape, burns, age, consent, dying declaration, *compos mentis*, etc. have been delivered.

The expert witness is often expected to provide clear 'yes or no' unambiguous answers to questions where there is profound uncertainty within the field of inquiry. The medical witness may find the process an intensely frustrating, confusing and unrewarding experience.

This approach to problem solving is alien to most medical practitioners. Expert witnesses may only be permitted to present part of their evidence and this may result in an incomplete or distorted version of the truth as they see it.

This system is not based on a concept of 'absolute truth' in a scientific sense but rather on satisfaction 'beyond reasonable doubt' that the legal elements of a crime have been established.

Opposing medical expert witnesses may have minor points of disagreement, which may be construed as major differences of opinion when this is not the case.

Cross-examination by its nature usually involves direct challenge of the witness and may at times be quite an aggressive process with direct personal attack not uncommon. This sort of combative approach to problem solving is obviously foreign to most doctors, some of whom would be rarely challenged, let alone attacked, in the course of their professional lives.

An expert witness may be confronted with seemingly simple terms which are defined by various laws of which the majority of expert witnesses will be unaware. The rules of evidence limit what the expert witness may say. [14]

Expert witnesses are often chosen and retained on the basis of what they will say and how they will say it rather than on any scientific or

professional merit. Partisan selection of expert witnesses maximizes potential for bias and inaccurate expert testimony.

There is a natural bias to do something serviceable for those who employ you and adequately remunerate you; with the consequence of being paid agents. [15]

The pressure of the adversary system often forces the experts to the limits of his expertise. Often the litigants' case becomes the expert's cause. Experts may feel like they themselves are on trial.

Especially for medical expert witnesses there is always a difference between the expertise of undergraduates and the postgraduates in a specific subject; and the courts should be sensitive to these issues, and the opinion should be given due weight-age and respect.

In India, it is a common perception that lot of time and effort is required to record evidence and therefore by and large members of the medical profession do not like to be involved in medicolegal cases. [16] Some of the possible reasons put forward for this perception are undue time consumption; repeated adjournments; and lack of work culture. Some of the reasons for delays in evidence are non-availability of presiding officer in the court; issue of summon by mistake; work suspended by lawyers; non-availability of some documents; adjournment of the case before arrival of medical witness, etc. It has been observed that overall more time is taken in waiting in courts and receiving payment than in actual recording of evidence. The mean lag period between registration of first information report and time to appear before court of law to give evidence by a medical witness has been found to be more than two years. [17]

Initiatives required on resolving the issues

There is ongoing judicial anxiety about the partisanship of forensic witnesses.

1. Several medical organizations and courts worldwide have issued professional guidelines for medical expert witnesses. [18]
2. Expert evidence should be subjected to peer review.
3. Medical evidence should be supported by substantial documentary evidence including photos, videos and radiographs.
4. Even in cases of re-examination and referred opinion cases, in case of any difference of opinion from the initial report, a definite opinion with a supporting basis should be provided. Further the courts may believe and rely on that opinion which is tallying with the eyewitness account and discard the opinion of other expert on this ground alone.
5. Expert opinion should be considered in the same light as clinical medicine and as such subject to same rules of negligence. [19] Statutes need to be amended so that breaches of the expert's duty of objectivity would constitute professional misconduct.
6. Expert witnesses should be required to read and sign a 'witness code of conduct' [20] outlining general principles with regard to impartiality and minimum requirements for medicolegal reports. [21]
7. There is a need for the accreditation of expert witnesses and making them accountable for their conduct during court appearance.
8. An expert's report and the further evidence must give
 - a. details of the expert's qualifications, relevant experience and accreditation;
 - b. details of literature or other information which the expert has relied on;
 - c. statement of all facts upon which those opinions are based;
 - d. statement that the facts stated in the report are within the expert's own knowledge;
 - e. name and qualifications of the person who carried out any examination or tests used;
 - f. summary of the range of opinion, and reasons for the opinion;
 - g. reasons if no definite opinion has been reached;
 - h. summary of the conclusions;
 - i. statement that the expert understands and complies to his duty to the court; and
 - j. declaration of truth.
9. The medical expert witness must understand that cross-examination is a method for testing the quality of their evidence and aggressive challenge should be expected. If the witness becomes angry or argumentative it can only decrease the quality of the evidence in the eyes of the judges.
10. Prior education and training of the expert witnesses assists in understanding the whys, hows and the procedures of the court.

11. With the emergence of private sector the focus of the laws on 'government experts' should be shifted to accommodate and accept the others.
12. The presence of trainees in the court should be acceptable to the judiciary.
13. An adequate and just compensation of the expert monetarily will be highly instrumental in reducing some natural bias due to this issue.
14. The experts are the guests of the court and should be treated with due respect.

Conclusion

Medical expert opinion is commonly required by the courts. A medical witness called in as an expert to assist the court is not a witness of fact and the evidence given by the doctor is really of an advisory character given on the basis of the signs and symptoms found on examination. The expert witness is expected to put before the court all materials inclusive of the data which induced him to come to the conclusion and enlighten the court on the technical aspects of the case by explaining the terms of science so that the court although not expert may form its own judgment on those materials after giving due regard to the experts opinion because once experts opinion is accepted, it is not the opinion of the doctor but of the court.

Doctors will continue to find themselves in this often alien and unfamiliar arena. Members of the medical profession, wary of interaction with the legal system, may think that the risk to reputation is too great and may be reluctant to help. Those willing to help may also be unnecessarily circumspect in their evidence. The current practice of soliciting expert medical testimony within the adversarial system

appears flawed and contains inherent pressures conspiring to maximize bias.

The conditions for the expert medical witness in courts is satisfactory which is quite in contrast to the apprehensions prevalent in the minds of medical professionals. However, this important aspect of the justice administration can be further improved by the following measures:

- a. Discouraging routine summoning of doctors; [22]
- b. Calling expert witness at pre-scheduled time;
- c. Recording experts' testimony by alternative judicial officer in case of non-availability of the presiding officer the court that summoned him.
- d. Amending provision of criminal procedures to have admissibility of the medical records
- e. Recording of experts' testimony through video-conferencing. [23]

The medical expert witness should be aware that what they may say in court is tightly controlled by complex rules of evidence. An understanding of the system's fundamental flaws may enable the expert witness to recognize when evidence is distorted and appeal to the judiciary accordingly. [24]

There is a unanimity that medical evidence plays a crucial role in helping the courts of law to arrive at logical conclusions. Therefore, the expert medical professionals should be encouraged to undertake medicolegal work and simultaneously the atmosphere in courts should be congenial to the medical witness. This attains utmost importance looking at the outcome of

the case, since if good experts avoid court attendance, less objective professional will fill the gap, ultimately affecting the justice. [25] Thus, there is a need to address the apprehensions that ponder the mind of medical professionals.

References

1. Morrison C. Munshis and Their Masters: The Organization of an Occupational Relationship in the Indian Legal System. *The Journal of Asian Studies*, 1972;31(2):309-328.
2. Constitution of India. Article 134.
3. Criminal Procedure Code of India 1973. Sections 61 – 69.
4. Hitchcock T. Evidence, expertise and the emergency physician: doctors should anticipate legal reform in their expert evidence. *Emerg. Med.* 2001;13:104
5. Samuels G. Medical truth and legal proof. *Med. J. Aust.* 1998;168:84
6. Weintraub MI. Expert Witness Testimony: An Update. *Neurol. Clin.* 1999;17:363
7. Palmer A. Principles of Evidence. Avalon Sydney: Cavendish Publishing, 1998
8. Cri LJ 2002 118-121
9. Miller DL. Courtroom science and standards of proof. *Lancet* 1987;1283
10. Weintraub MI. Expert witness under scrutiny. *Lancet* 1997;349:1176
11. Daubert v. Merrell. (1993) Dow Pharmaceuticals 113 Sct 2786 USA
12. Frye v. United States. (1923) 293 F 1013. at 1014 USA
13. Phillips JH, Bowen JK. Forensic Science & the Expert Witness. Sydney: Law Book Company, 1989
14. Freckelton I. The Trial of the Expert. A Study of Expert Evidence and Forensic Experts. Melbourne: Oxford University press, 1987
15. Brent RB. The irresponsible expert witness: a failure of biomedical graduate education and professional accountability. *Pediatrics* 1982;70:754
16. Verma SK. Legal Medicine in Post Independent India. Anil Aggrawal's Internet Journal of Forensic Medicine & Toxicology, Jan 2000;1(1): http://www.geradts.com/anil/ij/vol_001_no_001/paper002.html
17. Verma SK. Medical Evidence and Criminal Courts in Delhi, India. *Indian Internet Journal Of Forensic Medicine & Toxicology* 2004;2(2):2
18. American Academy of Pediatrics. Guidelines for expert witness testimony. *Pediatrics* 1989;83:312
19. Brahams D. Expert witnesses under scrutiny. *Lancet* 1997;349:896
20. Expert Witness Code of Conduct. Part 28, Rule 9C and Part 28A, Rule 2 NSW. Attorney General's Department lawlink. Available from: <http://www.agd.nsw.gov.au/dc.nsf/pages/witcode#top/>.
21. Boyarsky JD. Practical measures to reduce medical expert witness bias. *J Forensic Sci* 1989;34:1259

22. Pt. Parmanand Katara v. Union of India. AIR. SC, 1989; 2039-2045
23. Sen K. Virtual reality becomes virtual legality. The Indian Express. June 17, 2003
24. Ryan M. The adversarial court system and the expert medical witness: The truth the whole truth and nothing but the truth? Emergency Medicine 2003;15:283
25. Fish R, Rosen P. Physicians should be expert witnesses. J Emerg Med 1990; 8(5): 659-63

PATIENT SATISFACTION: A VALUABLE TOOL FOR AVOIDING ALLEGATION OF MEDICAL NEGLIGENCE

Dr. B.R.Sharma, MD, Professor,
Dept. of Forensic Medicine & Toxicology, Govt. Medical College & Hospital, Chandigarh – 160030, India
E-mail: drbrsharma@yahoo.com

Abstract

Every now and then we find the reports of mob turning violent in hospitals and nursing homes, causing damage to the property and at times manhandling the medical and paramedical teams working in the hospital. This demands for an introspection as to, are we, the health care workers discharging their duties efficiently? If the answer is yes, then why the patients are not satisfied with our services. A review of the medical literature relating to the term "patient satisfaction" reveals little research on the topic in the 1960s and 1970s. However, things began to pick up dramatically in the early 1980s. Between 1980 and 2000, there was a five-fold increase in the number of articles devoted to this topic. Why this burgeoning interest? Perhaps it was a natural outgrowth of the consumer movement begun in the 1960s and 1970s. Or maybe it reflected the maturation of the family medicine research agenda. Equally plausible might be the emerging competitiveness of managed care, which led health care providers to begin using patient satisfaction surveys to distinguish between providers.

Key words: Patient, Satisfaction, Negligence.

Introduction

It is worth noting that most patient-satisfaction studies are based on patients' experiences at one-time encounters rather than their experiences over time. In addition, discussions in the literature make it clear that quality of care is not what is being measured in patient surveys. In fact, many surveys intentionally avoid asking patients how they feel about the quality of their care, presumably because patients are not in a position to judge their physician's technical skill. It appears that what's being measured is typically a combination of the patient's expectation before the visit, the patient's experience at the visit and the extent to which the patient experienced a resolution of the symptoms that led him or her to make the visit. However, going by the results of various

studies, a number of factors are said to be associated with the 'patient satisfaction'.

Patient related factors

The literature appears mixed on the importance of patients' demographic and social factors in determining satisfaction. Some studies stated that patient demographics are a minor factor in patient satisfaction [1], while others concluded that demographics represent 90 percent to 95 percent of the variance in rates of satisfaction [2]. Nevertheless, the literature does shed some light on how particular demographic factors affect patient satisfaction.

1. Age: The most consistent finding has been related to age. Older patients tend to be more satisfied with their health care.

2. **Ethnicity:** Studies that have looked at ethnicity have generally held that being a member of a minority group is associated with lower rates of satisfaction. In a ranking of degrees of satisfaction, non-Hispanic whites had the highest satisfaction, followed by African Americans, Asian/Pacific Islanders and Hispanics. The lowest degree of satisfaction was found in Indians/Alaskan natives [3].

3. **Gender:** Studies on the effect of gender are contradictory, with some studies showing that women tend to be less satisfied and other studies showing the opposite [4].

4. **Socioeconomic status:** Most studies have found that individuals of lower socioeconomic status and less education tend to be less satisfied with their health care. However, one study found that frequent visitors to a family practice had lower educational status, lower perceived quality of life, and higher anxiety and depression scores and were more satisfied with their family physician [5]. Other studies have shown that poorer satisfaction with care is associated with experiencing worry, depression, fear or hopelessness [6], as is having a psychiatric diagnosis such as schizophrenia, post-traumatic stress disorder or drug abuse [7].

5. **Health status.** Looking at patients with chronic disease has shown some consistent patterns. Patients with poorly controlled diabetes were less satisfied with their care [7], as were migraine sufferers who reported more migraine-related disability [8]. Dissatisfied migraine sufferers were less likely to use Triptans currently, were more than two times more likely to have stopped them and were less likely to have their medications paid for by their insurance. Patients with two or more chronic illnesses reported more hassles with the health

care system than those with a single chronic illness [9]. In this study, when communication and coordination of care increased, the patients' perception of hassle decreased and satisfaction improved.

Physician related factors

Physicians can promote higher rates of satisfaction by improving the way they interact with their patients, available literature stresses on the following factors:

1. **Expectations:** Perhaps the most important lesson for physicians is to take the time and effort to elicit patients' expectations. When physicians recognize and address patient expectations, satisfaction is higher not only for the patient but also for the physician; it may help to remember that patients often show up at a visit desiring information more than they desire a specific action [10]. In addition, approximately 10 percent of patients in one study had one or more unvoiced desires in a visit with their physician [11]. The desire for a referral or for physical therapy was the most common. Young and undereducated patients were more likely to experience unmet needs at their visit, and they demonstrated less symptom improvement and evaluated their visit less positively.

2. **Communication:** Doctor-patient communication can also affect rates of satisfaction. When patients who presented to their family physician for work-related, low-back pain felt that communication with the physician was positive (i.e., the physician took the problem seriously, explained the condition clearly, tried to understand the patient's job and gave advice to prevent re-injury), their rates of satisfaction were higher than could be explained by symptom relief [12].

3. Control: Physicians can also improve patient satisfaction by relinquishing some control over the encounter. Studies have found that when physicians exhibited less dominance by encouraging patients to express their ideas, concerns and expectations, patients were more satisfied with their visits and more likely to adhere to physicians' advice [13].

4. Decision-making: Patient satisfaction can also be influenced by physicians' medical decision making. Patients expressed a preference for physicians who recognized the importance of their social and mental functioning as much as their physical functioning [14].

5. Time spent: Time spent during a visit plays a role in patient satisfaction, with satisfaction rates improving as visit length increases [15]. Time spent chatting during the visit was also related to higher rates of satisfaction. Physicians with high-volume practices were more efficient with their time but had lower rates of patient satisfaction, offered fewer preventive services and were viewed as less sensitive in the doctor-patient relationship [16].

6. Technical skills: Several studies have looked at patients' assessment of their physicians' technical skills and the effect on satisfaction, but the findings are contradictory. In a survey of 236 "vulnerable" older patients, better communication skills were linked to higher patient satisfaction but technical expertise was not [17]. However, another study found that when forced to make a trade-off, participants expressed a strong preference for physicians who have high technical skills [18]. Patients also indicated that a physician's ability to make the correct diagnosis and craft an effective treatment plan were more important than his or her "bedside manner" [19].

7. Appearance: Patients also appear to respond to a physician's appearance. In one study from New Zealand, patients indicated that they preferred "semiformal" attire and a smile. Next, in order of preference, were "semiformal" dress without a smile, a white coat, a formal suit, jeans and casual dress [20]. They were less comfortable with facial piercings, short tops, or earrings on men. In addition, most patients wanted to be called by their first name, be introduced to the doctor by his full name and title, and see a name badge.

System-related factors

Patient satisfaction is not simply a product of the patient's demographics and the physician's skills. It is also affected by the system in which care is provided.

1. The clinical team: Although it's clear that patients' first concern is their doctor, they also value the team with which the doctor works. One study found that while physician care was most influential to patients' satisfaction, the compassion, willingness to help and promptness of the physician's staff were next in importance [19]. In another large database of surveys, nurses were the next most important source of satisfaction, ahead of access-to-care issues [21]. Patients who had remained in a practice for more than 15 years attributed their loyalty to their physician first and to the "team concept" second [22].

2. Referrals: Effective referrals play a role in patient satisfaction. One study looked at referrals from the standpoint of the family physician, the referral physician and the patient, and found that satisfaction with the referral's outcome was higher when the family physician initiated the referral [23]. Similarly, a study of patients treated for recurring headaches

revealed that those who self-referred to a neurologist were less satisfied than those whose primary doctor had referred them [24]. A survey of cancer patients found that they valued their family physician highly and wanted to maintain contact with him or her, even when they were receiving cancer care elsewhere [25].

3. Continuity of care: Continuity of care, one of the pillars of family medicine, is felt to have suffered under managed care. While it is unclear to what degree patients in general value continuity of care, it is clear that patients who have been followed by their physician for more than two years are more satisfied with their care [26] - particularly when they are able to see their own physician.

Why bother?

While the literature contains a number of contradictions on the subject of patient satisfaction, it also offers a number of compelling reasons for working to improve satisfaction among our patients. Studies support the idea that patients who get better are (not surprisingly) satisfied with their care. One study, in which researchers followed up with patients three weeks after they were seen, found that most were better, but those who were still symptomatic were still worried, had unmet expectations and had lower satisfaction [27]. African Americans with type-2 diabetes who were most satisfied with the helpfulness of their physicians and nurses were significantly less likely to use the emergency room [28]. Patients who reported being treated with dignity and who were involved in decisions were more satisfied and more adherent to their doctor's recommendations [29]. Patient satisfaction surveys of inpatient physician performance showed an inverse relationship

between satisfaction and risk management episodes [30].

In addition, physicians can find practical take-away lessons in the time tested literature, such as the following:

Treat patients with dignity and include them in decision making;

Work with a team you can be proud of and invest in their ongoing development;

Elicit patients' concerns by asking questions such as "What do you think is going on?" or "What are you afraid of?"

Dress in semiformal attire - and don't forget to smile;

Lastly, while it may not be as easy as the above lessons, find pleasure in what you do. Physicians who report high professional satisfaction have patients who are more satisfied with their care [31].

References

1. Hall JA, Dornan MC. Patient sociodemographic characteristics as predictors of satisfaction with medical care: a meta-analysis. *Soc Sci Med.* 1990; 30:811-818.
2. Sixma HJ, Spreeuwenberg PM, van der Pasch MA. Patient satisfaction with the general practitioner: a two-level analysis. *Med Care.* 1998; 36:212-229.
3. Haviland MG, Morales LS, Dial TH, Pincus HA. Race/ethnicity, socioeconomic status and satisfaction with health care. *Am J Med Qual.* 2005; 20:195-203.

4. Kersnik J, Svab I, Vegnuti M. Frequent attenders in general practice. *Scand J Prim Health Care*. 2001; 19:174-177.
5. Frostholm L, Fink P, Oernboel E, et al. The uncertain consultation and patient satisfaction. *Psychosom Med*. 2005; 67:897-905.
6. Desai RA, Stefanovics EA, Rosenheck RA. The role of psychiatric diagnosis in satisfaction with primary care. *Med Care*. 2005; 43:1208-1216.
7. Redekop WK, Koopmanschap MA, Stolk RP, Rutten GE, Wolffenbuttel BH, Niessen LW. Health-related quality of life and treatment satisfaction in Dutch patients with type-2 diabetes. *Diabetes Care*. 2002;25:458-463.
8. Walling AD, Woolley DC, Molgaard C, Kallail KJ. Patient satisfaction with migraine management by family physicians. *J Am Board Fam Pract*. 2005;18:563-566.
9. Parchman ML, Noel PH, Lee S. Primary care attributes, health care system hassles and chronic illness. *Med Care*. 2005; 43:1123-1129.
10. Rao JK, Weinberger M, Kroenke K. Visit-specific expectations and patient-centered outcomes: a literature review. *Arch Fam Med*. 2000; 9:1148-1155.
11. Bell RA, Kravitz RL, Thom D, Krupat E, Azari R. Unsaid but not forgotten. *Arch Intern Med*. 2001; 161:1977-1984.
12. Shaw WS, Zaia A, Pransky G, Winters T, Patterson WB. Perceptions of provider communication and patient satisfaction for treatment of acute low back pain. *J Occup Environ Med*. 2005; 47:1036-1043.
13. Cecil DW, Killeen I. Control, compliance and satisfaction in the family practice encounter. *Fam Med*. 1997; 29:653-657.
14. Sherbourne CD, Sturm R, Wells KB. What outcomes matter to patients? *J Gen Intern Med*. 1999; 14:357-363.
15. Gross DA, Zyzanski SJ, Borawski EA, Cebul RD, Stange KC. Patient satisfaction with time spent with their physician. *J Fam Pract*. 1998; 47:133-137.
16. Zyzanski SJ, Stange KC, Langa D, Flocke SA. Trade-offs in high-volume primary care practice. *J Fam Pract*. 1998; 46:397-402.
17. Chang JT, Hays RD, Shekelle PG, et al. Patients' global ratings of their health care are not associated with the technical quality of their care. *Ann Intern Med*. 2006; 144:665-672.
18. Fung CH, Elliott MN, Hays RD, et al. Patients' preferences for technical versus interpersonal quality when selecting a primary care physician. *Health Serv Res*. 2005; 40:957-977.
19. Otani K, Kurz RS, Harris LE. Managing primary care using patient satisfaction measures. *J Healthc Manag*. 2005; 50:311-324.
20. Lill MM, Wilkinson TJ. Judging a book by its cover. *BMJ*. 2005; 331:1524-1527.
21. Wolosin RJ. The voice of the patient. *Qual Manag Health Care*. 2005; 14:155-164.
22. Brown JB, Dickie I, Brown L, Biehn J. Long-term attendance at a family practice teaching unit. Qualitative study of patients' views. *Can Fam Physician*. 1997; 43:901-906.

23. Rosemann T, Wensing M, Reuter G, Szecsenyi J. Referrals from general practice to consultants in Germany. *BMC Health Serv Res.* 2006; 6:5.
24. Bekkelund SI, Salvesen R. Are headache patients who initiate their referral to a neurologist satisfied with the consultation? *Fam Pract.* 2001; 18:524-527.
25. Norman A, Sisler J, Hack T, Harlos M. Family physicians and cancer care. Palliative care patients' perspectives. *Can Fam Physician.* 2001; 47:2009-2012.
26. Donahue KE, Ashkin E, Pathman DE. Length of patient-physician relationship and patients' satisfaction and preventive service use in the rural south: a cross-sectional telephone study. *BMC Fam Pract.* 2005; 6:40.
27. Kroenke K, Jackson JL. Outcome in general medical patients presenting with common symptoms. *Fam Pract.* 1998; 15:398-403.
28. Gary TL, Maiese EM, Batts-Turner M, Wang NY, Brancati FL. Patient satisfaction, preventive services and emergency room use among African-Americans with type-2 diabetes. *Dis Manag.* 2005; 8:361-371.
29. Beach MC, Sugarman J, Johnson RL, Arbelaez JJ, Duggan PS, Cooper LA. Do patients treated with dignity report higher satisfaction, adherence and receipt of preventive care? *Ann Fam Med.* 2005; 3:331-338.
30. Stelfox HT, Gandhi TK, Orav EJ, Gustafson ML. The relation of patient satisfaction with complaints against physicians and malpractice lawsuits. *Am J Med.* 2005; 118:1126-1133.
31. Haas JS, Cook EF, Puopolo AL, Burstin HR, Cleary PD, Brennan TA. Is the professional satisfaction of general internists associated with patient satisfaction? *J Gen Intern Med.* 2000;15:122-128

FACTUALS OF MEDICAL RECORDS

Dr. Vijayanath V, MD, DNB, MNAMS, Assistant Professor
S.S. Institute of Medical Sciences & Research Centre, Davanagere-577005, Karnataka (INDIA)

Abstract

The patient's medical records are important to both the patient and the doctor, medicolegally, chronologically, for management and for reference, etc. There are guidelines issued by various appropriate regulatory bodies and professional groups regarding the medical records. These guidelines should be known to a doctor and meticulous records need to be maintained.

Key words: Patient, Medical, Record, History, Negligence.

Medical record is a documentary evidence of any fact / an event. From the forensic view point, properly maintained case records are vitally important for the defence of doctor in case of any allegation of negligence against him.

Other than Medico-Legal purposes, Medical records help in documenting patient's past & present history of illness, helps in following of patient's progress & response to the treatment/ management, predicting risks to the patient with the above points it helps in clinical research & advancement for improving the future generation, medical audit hospital statistics, educating medical professional & clinical research in forming treatment, policies & guidelines. Epidemiological data can also be prepared for identifying the ailing risks to the community.

The patient's record cannot be used in educational / diagnostic conference / clinics or for publication without the consent of the patient. Hospitals have right to use the Medical records without consent of the patient for statistical purposes and quality of care determinations.

In some part of the world, the physicians asking for the tests are the owners of these (radiological films and others investigation reports and other case records). Patients can get these medical records/ copy of these only when he is referred to another physician or decides to file a suit against the physician.

Physician is reluctant to reveal any case details to a person other than the patient lest the physician may be sued for the breach of confidentiality. Medical records must be accurate, appropriate, chronological, factual, relevant and complete.

Nothing should be altered, deleted, substituted / added to / from the record. If tampering is done patient may be awarded large sums even though there has been no negligence.

The omission of essential details from the notes may cast a doubt on the truthfulness of the witness. If a correction has to be made of a prior entry on the records, it should not be totally obliterated, but a single line should be drawn through the word to be changed and correct information should be written above and initialled [1].

It is always controversial regarding the preservation of these Medical records.

These are some guidelines for the preservation of Medical records in India

According to Indian Medical council regulation 2002, Every Physician shall maintain all the patient's Medical records that have been treated as indoor patients for a period of three years from the date of commencement of the treatment [2].

The Medical records should be preserved for two years according to consumer protection act.

In Medico-legal cases, these Medical records should be preserved for 30 years.

Under limitation act, limited period for filing a case is up to three years.

Either the patient / legal attendee or Legal authorities make a request for Medical records / documents, shall be issued without a period of 72 hours.

If he refuses to give them, then he shall be held responsible for misconduct.

In United Kingdom, Data Protection Act 1984, states that an individual has to be informed by

any one holding computerized information whether that information includes patient's personal data and it has to be supplied with copies of it

According to Access to Medical Reports act 1988, where the patient has exercised his/her rights, insurance agencies and / or employers may not be shown a report until the patient has consented to its disclosure [3].

References

1. Reddy KSN. The essentials of Forensic Medicine and Toxicology. 24th ed. , Hyderabad; K. Sugunandevi, 2005, 37
2. Indian Medical Council Regulations 2002, (Professional conduct, etiquette and ethics) s 1.3 sub-s 1.3.1 and 1.3.2
3. Mathiharan K, Patnaik AK. Modi's Medical jurisprudence and toxicology. New Delhi ; Butterworth's, 2005,114

RAILWAY ACCIDENT – COMPLETE DECAPITATION

Dr Prateek Rastogi, MD, PGDMLE, Assistant Professor,
Dept. of Forensic Medicine, Kasturba Medical College, Mangalore, Karnataka

Abstract

Decapitation or complete severance of head from the body is imminently fatal condition without any exception. A case of decapitation in a railway accident is presented. It stresses on the fact that there is an increasing number of such cases and there is always a question whether the death was a homicide or suicide or an accident.

Key Words: Railway accident; Decapitation; Spinal cord transaction.

Introduction

Indian railway is largest public sector enterprise in the world. It caters to the transportation need of million of people everyday at low cost. Maintenance and safety of railways as well as security of passengers have always been a herculean task ever since its inception. Cases of accidents at road crossings, slipping during boarding or getting down from moving train are frequently encountered. Similarly, instances of jumping in front of moving train or lying on the railway track to commit suicide are also not uncommon. Few cases have also been reported where person have been killed and later thrown on railway track to simulate suicide or accident.

A case is presented where a completely decapitated body was found on the railway track.

Case Report

As per the information furnished by the Railway police the dead body of an unknown male aged about 25 yrs. was found on the railway track at night and autopsy was performed next morning.

External Examination

Dead body was that of an adult male, moderately built and poorly nourished, having dark complexion. Body was warm and stiff. Post-mortem lividity could not be appreciated.

Following external injuries were present on the body

1. Complete transaction of neck (Decapitation) at the level of upper cervical vertebrae, margins of wound were irregular, abraded & contused and stained with grease. Soft tissues & muscles at the transaction site were lacerated. All structures at the level of injury were completely transected with crushing of edges. (Fig.1)
2. Laceration measuring 2 x 1 cm x bone deep, with contused margins, present on the left side of forehead, 2 cm above the outer angle of eye.(Fig.2)
3. A laceration measuring 5 x 3 cm, with contused margins, present on the left cheek with underlying fracture of left maxilla.(Fig.2)

4. An Avulsed laceration measuring 19 x 3 cm x bone deep present on the upper part of right arm, with crushing of underlying muscles & fracture of shaft of humerus. (Fig.3)

No other external injuries were present on the body.



Fig.1 Complete Decapitation



Fig.2 Laceration of forehead and left cheek



Fig.3 Laceration and crush injury to arm

Internal Examination

Fracture of 1st & 2nd ribs on both sides parasternally. Dislocation of right sternoclavicular joint.

Laceration of trachea and oesophagus in the upper part.

Stomach contained yellowish brown liquid without any abnormal odour.

All other internal organs were intact and healthy.

Cause of death was opined as complete transection of the cervical spinal cord (Decapitation).

Discussion

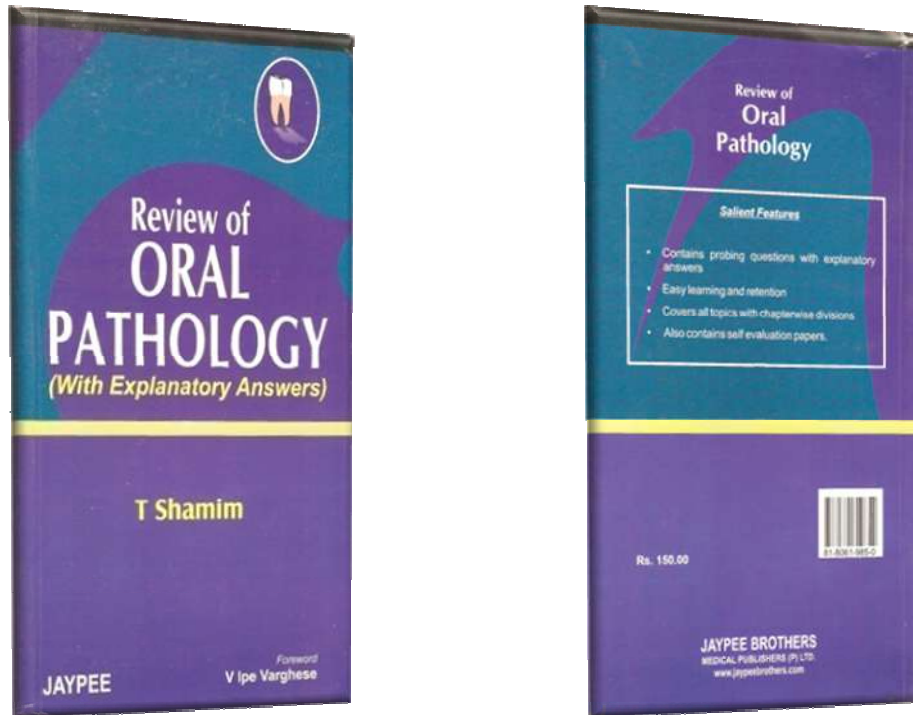
Decapitation is an imminently fatal entity. Cases are on record where person have been killed by decapitation or else their head have been severed post-mortem. [1] Decapitation in vehicle assisted suicides and complete hanging have also been reported. [2,3,4] Railway fatalities have also resulted from suicidal or accidental decapitation. [5]

In present case the dead body was found on the railway track with head lying few feet away. Slight tension was in air as nearby villagers suspected homicide. Careful examination of external injuries showed that wound margins were irregular; tissues were crushed and stained with grease. No other fatal injury was present other than decapitation. These findings ruled out possibility of homicide by decapitation as well as post mortem decapitation.

References

1. Turk EE, Puschel K, Tsokos M. Features characteristic of homicide in cases of complete decapitation. *The American Journal of Forensic Medicine and Pathology*, 2004; 25(1): 83-86.
2. Turk EE, Tsokos M. Vehicle-assisted suicide resulting in complete decapitation. *The American Journal of Forensic Medicine and Pathology*, 2005; 26(3): 292-293.
3. Byard RW, Gilbert JD. Cervical fracture, decapitation, and vehicle assisted suicide. *Journal of Forensic Sciences*, 2002; 47(2): 392-394.
4. Rothschild MA, Schneider V. Decapitation as a result of suicidal hanging. *Forensic Science International*, 1999; 106: 55-62.
5. Cina SJ, Koelpin JL, Nichols CA et al. A decade of train-pedestrian fatalities: the Charleston experience. *Journal of Forensic Sciences*, 1994; 39: 668-673.

BOOK REVIEW



I know Dr. Shamim and he is an honest academician wedded to his subject. Dr. T. Shamim has beautifully compiled the question bank in his book entitled "Review of Oral pathology". He has prepared the answers with explanations which is rare in such types of MCQ books. The style of explaining answers is so lucid that answers will stick to the mind. He has covered all the relevant topics in oral pathology. Size of the book is handy and it is elegantly designed and printed by well known publishers "Jaypee brothers". Price is also economical to suit the pockets of the students. Self evaluation papers will help the students to judge by themselves their knowledge on this subject. This book will prove very useful to the students of oral pathology.

Prof. R.K.Gorea

LETTERS TO THE EDITOR

Dear Sir,

The journal of Punjab Academy of Forensic Medicine and Toxicology, year 2006 issue was well received. The idea of having the journal "peer reviewed" is an encouraging one in that it will go a long way in enhancing the standard of the articles and ultimately the knowledge dissipated to the readers. It is a good and laudable innovation.

The article by Oberoi DV et al. about the estimation of stature and sex from foot print length by regression formulae was really interesting.

May I congratulate you on your endeavor and wish that next PAFMATCON be a grand success.

Dr. Dasari Harish

Reader

Dept of Forensic Medicine and Toxicology
Government Medical College, Chandigarh

Dear Sir,

There are different views among the doctors regarding the acceptability of the carbon copies of medico legal reports in the courts. This has been clarified by the honourable Supreme Court.

Carbon copy made by one uniform process of certificate of doctor given in discharge of professional duty, then the copy is admissible in view of section 32 of Evidence Act and also admissible being primary evidence within explanation 2 of section 62 of Evidence Act. (AIR 1989 SC 702 A)

I hope that this will clear the doubts in the minds of many doctors.

Dr. O.P.Aggarwal

Professor, Medical College, Mullana

Dear Sir,

The journal of the Punjab Academy of Forensic Medicine and Toxicology is one thing that I look forward to every year. The papers, review articles and case reports cover a wide array of topics and make for interesting reading not only to the forensic community but also to those doctors working in remote rural areas, who are handling all types of medico-legal cases.

The editorial published in the previous issue of the journal, dealing with the fundamentals of management of sexual assault cases was well-written in a lucid and concise manner and incorporating all the aspects of this very useful and essential topic. I agree with the author that the delay in the receipt of reports of the chemical examiner causes frustration. The need of the day is to set up well-equipped forensic science laboratories in every district of the state so as to minimize such delays.

Dr. K. H. Chavali

Sr. Lecturer, Forensic Medicine
Government Medical College, Chandigarh

Dear Sir,

The 2006 issue of the journal was interesting. The article "Donation of Bodies for Cadaveric Dissection in Medical Colleges" by Prakash et al was well-written and informative describing the various programs in the Eastern and Western countries. Such articles need to be encouraged.

Dr. Amandeep Singh,

Demonstrator, Forensic Medicine

Government Medical College, Chandigarh