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Editorial

WITHOUT PREJUDICE TO THE ROLE OF PATHOLOGISTS IN MEDICOLEGAL MATTERS

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Last month one of our colleagues autopsied a body of 68 years male, who was admitted for couple of days in a hospital for hemorrhagic cerebral infarct. The treating doctors had confirmed the diagnosis by CT scan. Autopsy was necessitated because at the time of hospitalization he was admitted in an unconscious condition when the police were informed and as per the existing protocol of the hospital, they have again intimated the police after the patient died. The police in turn referred the body for a medicolegal autopsy.

Before autopsy all his clinical documents including the CT scan reports and the treatment protocol were perused. Treatment was consistent with the diagnosis of cerebral infarct. At autopsy the findings clearly revealed presence of midline shift, hemorrhage and other brain findings consistent with cerebral infarct. Cause of death was finalized, though he preserved the entire brain for pathological examination, including histopathological study.

He received the report from the pathologist in due course of time, which read as “No specific pathology in brain”

The above discussion might have reminded many of you; of all those cases in which you had similar experience i.e. classical findings of a natural disease on gross examination during autopsy but without histopathological confirmation by the pathologist.

As already clarified in the title itself, I do not have any intention of either criticizing or challenging the professional expertise of any of the pathologists. They do have more than one valid explanation for such a no confirmatory report. I totally and genuinely accept those. However, the purpose of this editorial is to review and revise our policy about the necessity of a histopathological confirmation and steps to be taken in order to minimize the non-confirmatory reports by increasing our involvement in the entire process.

Molina DK et al in their article on “Is routine histopathologic examination (HPE) beneficial in all medicolegal autopsies?” have concluded that, “we feel that routine microscopic examination (performing histologic examination in all cases regardless of cause and manner of death) in forensic autopsy is unnecessary. Microscopic examination should be used, as needed, in certain circumstances but is not necessary as a matter of routine.”⁽¹⁾ Similarly in their study “Histo-Pathology examination in medico-legal autopsy- pros and cons” conducted at Forensic Medicine Department, GMC, Vadodara, the authors have concluded that in their opinion routine microscopic examination in forensic autopsy is avoidable and should rather be used rationally as and when the circumstances are indicating its worth and demand. The reason cited by them for their such opinion is that non-confirmatory histopathology report in case of a very evident pathology (even proved by advanced clinical investigations) at autopsy creates an unwanted contradictions in the opinions of two experts and it also provides a valid ground to get some legal benefit by the accused party⁽²⁾.

The importance of histopathology in finalizing the cause of death (in addition to its other applications) cannot be underestimated. Rather than thinking of an extreme approach of not sending the tissues for HPE, we should design a protocol to ensure that the HPE is undertaken in a manner which will prevent all those factors playing a role in a non-confirmatory report in an otherwise confirmed diagnosis.

Currently a forensic expert collects and preserves the tissue/ an organ for HPE and dispatches it to the pathology department for further processing and opinion. Once the HPE report is ready it is again received through police by the forensic medicine department. The forensic expert then interprets the report in view of his postmortem findings.

The above discussion pertains to medical colleges having a functional department of forensic medicine and pathology. The state forensic science laboratories do not receive the samples for histopathology due to an inherent lacuna that there is no provision of employment of a qualified pathologist or forensic medicine experts for reporting the HP slides. Thus, it is evident that present forensic medicine expert have to depend on the department of pathology for processing and the pathologist for opinion about the HPE. There are very few departments having the facilities, infrastructure and equipments for processing the tissue samples for HPE.

Had this current arrangement been working properly to the satisfaction of all and fulfilling the objectives, there was no need of further discussion on this issue. However, as discussed hereinabove, the situation is far from satisfactory. In the present system the forensic expert bases his final opinion as to the cause of death on the HPE opinion given by the pathologist. Currently there is no active participation of the forensic expert in selection of the tissue from the organ sent and reporting of the processed slides. There are rare instances when the forensic expert calls for the processed slides through police from the department of Pathology and he reports the slides in view of the autopsy findings and other medicolegal investigations.

The situation is still worse at the periphery (RH and PHCs) where maximum numbers of medicolegal postmortems are carried out and where the medical officers (not being a forensic expert) do not have any access to a nearby Pathology department where he can send the samples of tissues for HPE. The IOs are not properly informed as to where to carry the samples handed over to him for HPE by the MO. Till date there is no express provision for or against private qualified pathologists to process and report the samples referred through police by a MO for HPE.

The PG curriculum for MD, FMT mandates the student to be well versed with relevant basic and appropriate applied aspect of allied pre, para-clinical disciplines. The PG students undergo rotatory posting in department of Pathology for three weeks in which they develop comprehensive competence in topics like injury, inflammation, repair, thromboembolism, shock, gross and microscopic appearance of vital organs, endocrines, infection, immunology, HIV, anaphylaxis, insulin, penicillin, observation, collection, preservation, forwarding of pathology and microbiology evidence. The theory paper on basic sciences includes relevant topics in Pathology. Thus, a forensic expert with a postgraduate qualification in forensic medicine is qualified to undertake the task of gross and microscopic examination of the tissue samples that are relevant to their medicolegal purpose. In contrast if we study the curriculum of MD, Pathology, the basic sciences do not include the subject of forensic medicine. Their PG students are not posted in the departments of forensic medicine to study the pattern of various medicolegal cases which are the source of tissues and organs being sent to them for their opinion. Though they are supposed to conduct clinical autopsies, we all are well aware of the number of clinical autopsies being conducted in our respective mortuaries. The number of clinical postmortems has drastically fallen, not only in India but the world over ⁽³⁾. Thus, they are now a day not exposed to autopsies, whether medicolegal or clinical. In such a situation how does one expect the MD pathology candidate to do full justice to the various tissues and organs that we send to them for their opinion, which are so valuable for us to decide the issue as important as the cause of death? I have no intention to question the authority of the pathologist as far as they are reporting on the tissues and organs received from the wards and OTs where they are masters in commenting on the various disease processes and their stages etc. However, I feel that, when it comes to processing and reporting on samples of medicolegal significance

derived during a medicolegal autopsy, then a forensic expert will always be at an advantage if he himself actively participates in selecting the site of sectioning the tissue and the reporting of the processed slides. The forensic expert who has conducted the postmortem and is aware of the history of the case, the investigation reports, the postmortem findings and who ultimately has to reach the decision regarding the cause of death is at a greater advantage in analyzing the slides as he will look for specific findings or their absence in the slides which he is anticipating or suspecting.

A pathologist, even though he is provided with a brief history of the case will surely be at loss in reporting some findings which might be of obvious importance to a forensic expert. The pathologists are more likely to concentrate on the evidence of natural disease process, which might be a fact already known to the forensic expert through the medical records. The detail report of the pathologist on the disease process, its involvement, its classification and its grading etc will be of great significance to a clinician but may be of little significance to a forensic expert, who might be interested in knowing other details.

Thus, it is always a better option that whenever possible the forensic experts should get involved in the collection, preservation, processing, reporting and interpretation of the HP slides. It can be accomplished by following ways:

1. Wherever possible, develop the infrastructure of the department and seek the necessary equipments and technical expertise in your own department of forensic medicine and develop a protocol to process every sample of medicolegal significance personally/ under your direct supervision and guidance. Prepare your own report. Additionally also send one tissue sample to department of pathology to get their opinion on co-existing natural disease/s.
2. If it is not possible, then at least develop an internal protocol to ensure your presence in the department of pathology along with a qualified pathologist at the time of selection of tissue, trimming and reporting of slides. You both can sign the HPE report.
3. If this seems impossible then at least develop a protocol to call for the slides already reported by a pathologist and study them personally in view of the knowledge of other findings of clinical investigations and postmortem picture. Prepare your own report. Preserve the slides for future reference.

A forensic expert is qualified in and is expected to know the histopathological techniques, the processes and the reporting skills. The interpretation part is already being undertaken by them. If the initial processing and reporting is also carried out by them (alone or in association with a pathologist) then definitely it will have an added advantage in interpreting the findings. Ideally this procedure should be followed in all such cases where a forensic expert feels it necessary to preserve a tissue for HPE. However, even if it is followed in only those cases having special significance, it will definitely benefit the justice system to a great extent.

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Original Paper

A STUDY OF FATAL FALL ACCIDENTS IN ELDERLY

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Original Paper

A STUDY OF FATAL FALL ACCIDENTS IN ELDERLY

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ABSTRACT:

Fall-induced injuries and death among elders are increasing. Little is known about the epidemiology of these events in India. The purpose of present study is to assess the trends and circumstances of fall-induced deaths amongst elder people. 38 persons aged 60 years or older who were autopsied with history of fall accidents are included in the study, comprising of 32 (84.21%) male and 6 (15.78%) female. Considering the place of incidents, it was residential area in 21 (55.26%) and outdoors in 17 (44.73%). 27 (71.05%) persons received medical attention. The common cause of death in elder people appears to be head injury accounting for 34 (89.47%) deaths. Fractures were noted in 21 (55.26%) persons. Fall-accidents represent unintentional form of injuries and leading cause of morbidity and mortality in elder population. The present study identifies some possible factors in causation of fall-induced deaths and it is high time that a comprehensive preventive policy should be sought to prevent these deaths.

KEY WORDS: fall-accidents, falls, elder, death, autopsy

INTRODUCTION:

Fall-accidents represents unintentional form of injuries and are leading cause of morbidity and mortality in elder population. In fact, falls account for approximately 10% of visits to emergency department and 6% of urgent hospitalisation among elderly people (1). Elder people constitute about 6.9 % of population in India (2) and with increase in life expectancy, it is expected that the number will increase further. The substantial increase of elder population will expand a potential group of individuals who are vulnerable to falls and likely to be victims of its consequences. Review of Indian literature reveals that no epidemiological study on fall induced injuries and deaths of elder adults has been conducted. The purpose of present study is to assess the trends and circumstances of fall-induced deaths in older people and to provide epidemiological data so that preventive measures can be undertaken.

MATERIALS AND METHODS:

This is a two-year prospective study conducted at Department of Forensic Medicine, Government Medical College, Nagpur, which is a tertiary care teaching hospital located in the central part of India. The data for epidemiological analysis were obtained for the year 2005 and 2006. Total of 4243 cases were autopsied during the two-year period, of which 38 cases i.e. 0.90 % were of fall induced deaths in the geriatric age group of 60 years and above, who constituted the material for the present study. A standard proforma was designed to ensure consistency for the whole sample. The relevant data were obtained from the police requisition forms, interview of the near-relatives, autopsy reports, clinical case records and histopathology report as the case may be.

RESULTS:

Of the 38 cases studied, 32 (84.21%) were male and 6 (15.78%) were female. Mean age was 68.86 years (standard deviation 6.45 years), with a range of 60 to 85 years (Table 1).

Reviewing the place of incidents, 21 (55.26%) happened at home and 17 (44.73%) occurred at outdoors. Amongst domestic fall-accidents, maximum number 9 (42.85 %) occurred in bathroom, followed by fall at stairs 8 (38.09%). 2 (9.52 %) elder experienced difficulty in getting up from bed and 2 (9.52%) sustained falls while removing a two-wheeler.

Table 1: Demographic profile of cases.

| Sex | No. of cases | Age (years) | | |
|--------|--------------|-------------|-------|------|
| | | Mean | Range | SD* |
| Male | 32 | 69 | 60-85 | 6.55 |
| Female | 06 | 68.16 | 62-80 | 6.36 |
| Total | 38 | 68.86 | 60-85 | 6.45 |

*SD = standard deviation

Of the outdoor accidents, 15 (39.47%) persons had giddiness prior to fall and in 2 (5.26%), the fall was precipitated by imbalance (Table 2). The maximum number of incidents occurred in morning hours 20 (52.63%) followed by falls at evening hours 10 (26.31%) and at noon 8 (21.05%).

Table 2: Reported mechanism of injury (n = 38)

| Mechanism of injury | No. of cases |
|--------------------------------|--------------|
| Slip in bathroom | 9 |
| Fall at stairs | 8 |
| Fall due to giddiness | 15 |
| Removing vehicle | 2 |
| Getting up from bed | 2 |
| Imbalance & fall on same level | 2 |
| Total | 38 |

27 (71.05%) persons received medical attention and were hospitalized. The period of survival amongst the hospitalized ranged from 3 hour to 649 hour (about 27 days) with mean hospital stay was 95.26 hour (about 4 days). Considering the association of chronic illness in elder persons, 32 (84.21%) had one or more diseases in form of hypertension, ischaemic heart disease, diabetes mellitus, benign hypertrophy of prostate, chronic obstructive pulmonary disease and pulmonary tuberculosis.

The common cause of death in elder appears to be head injury and intracranial hemorrhage accounting for 34 (89.47%) deaths (Table 3). 20 (52.63 %) people had intradural hemorrhage (subdural hematoma + subarachnoid hemorrhage + brain contusion). For subdural hematoma, common site appears to be parieto-temporal area and for brain contusion, frontal lobe and temporal lobe were the common sites. Fracture injuries were noted in 21 (55.26%) persons and amongst them skull was affected in 17 (44.73%) individuals followed by femur neck fracture 4 (10.52%). The common type of skull fracture appears to be linear in 9 cases (52.94%). The commonest bone involved was parietal and temporal bone accounting for 8 (47.05%) cases (Table 4). One elder each died due to injury to spine, coronary artery disease, perforation peritonitis secondary to blunt trauma abdomen and cardiac tamponade.

Table 3: Distribution of pattern of head injury (n =34).

| Injury Type | No. of cases |
|---------------------------|--------------|
| Subdural hematoma | 3 (8.82%) |
| Subarachnoid hemorrhage | 10 (24.41%) |
| Brain contusion | 1 (2.94%) |
| EDH* + SDH† + Contusion | 3 (8.82%) |
| Intradural hemorrhage | |
| 1) SDH + SAH‡ + contusion | 12 (35.29%) |
| 2) SAH + Contusion | 4 (11.76%) |
| 3) SDH + Contusion | 1(2.94%) |

* EDH - extradural hematoma
† SDH – subdural hematoma
‡ SAH – subarachnoid hemorrhage

Table 4: Distribution of pattern of fractures (n =21).

| Injury Type | No. of cases |
|-------------------------|--------------|
| Femur neck fracture | 4 (10.52%) |
| Skull fracture | |
| 1. Linear | 9 (52.94%) |
| 2. Depressed comminuted | 5 (29.41%) |
| 3. Basilar | 3 (17.64%) |

DISCUSSION:

The relative importance of fall-induced death is evident, as these are preventable deaths. In order to prevent injuries, information is needed about both the human and environmental risk factors (3). Falls and the resulting injuries are among the most serious and common medical problems suffered by the elderly in the United States (4). In addition to medical expenditure, patients suffer acute morbidity, long-term loss of function, substantial risk of hospitalization, fear of recurrent fall and an increased risk of death (5-7). Statistically speaking, about 10% to 15% of falls result in serious injuries with 0.2% to 1% of them resulting in hip fracture, 5% in fractures at other sites and 5% in soft tissue injuries (4, 5, 8). Nonetheless in United States, falls in elderly are the second leading cause of deaths due to unintentional injuries (9). Traditionally, monitoring and surveillance of fatal injuries have been based on mortality data derived from death certificates (DC) and hospital discharge data (HDD) (10). However, like other deaths (11, 12), traditional system of data collection may prove inadequate and under such circumstances review of autopsy reports can prove to be one of the useful sources to identify fall-related deaths and elucidating the emerging trends.

For inhabitants, home is a safe abode. Conversely, this is the place where majority of accidents had occurred. The common mechanisms of domestic falls are falling on the same level, bathroom slip, falls at stair and fall from getting up of bed (3,13,14). Among old adults, the suspected increasing average propensity for falls has been explained by such factors as increased occurrence of coexisting medical problems, poor mobility, balance and gait abnormality, myopathies, proprioceptive impairment due to neuropathy or diminished vision with growing age increases risk of falling (15). Use of smooth and slippery flooring in

bathroom, non-installation of stair railings, high stair steps height, environmental circumstances, tiredness and improper lighting compound the problem (13).

Considering the present study, about 39.47% persons experienced giddiness prior to fall. Clinically significant postural hypotension is detected in up to 30% of elder people (1,16). Moreover, some elderly patients with postural hypotension do not report symptoms to their family physician. This is one of the potential reasons for falls and family physician needs to address this issue while examining an elderly. Cardiovascular diseases and other chronic disorders may lead to impairment in sensory & cognitive functioning and decreased gait stability and found to be associated with increased risk for falls (3).

In contrast to others (13), the present study recorded majority of incidents in morning hours. However, no seasonal variation could be ascertained due to insignificant differences. All the victims belong to urban area. Men outnumbered female in fall-related accidental deaths and the findings of present study are in accordance with other studies (3,15,17,18).

Fall-induced injuries and death in elder population are a major health problem in developed nation and in turn, is the second leading cause of head and spinal cord injury. (17,18). The common cause of death in present study is head injury and about 55.26% people sustained fracture.

One person each, died due to coronary artery disease and cardiac tamponade. These cases are included since they have been brought with history of fall and had received superficial or minor trauma. It is true that these injuries had not caused death but may be the first indication of undetected illness and repeated falling often heralds a decline in a patient's condition (13). It is important that doctor or general practitioner should not overlook the minor injuries in elder.

There is accumulating evidence from studies on use of pharmacologic agents as possible factors for falls. To date, serotonin-reuptake inhibitors, tricyclic antidepressants, neuroleptic agent, benzodiazepines, anticonvulsants and class I-A antiarrhythmic medications have been shown to have a link to an increased risk of falling (1,3,19).

Reducing fall-induced deaths among elder person offers an opportunity to improve the public health (18). Although few falls have a single cause, the majority results from interaction between long term or short term predisposing factors and short term precipitating factors in person's environment (1). Fall-prevention program have given convincing evidence that strength and balance training of older adults as well as more multifactorial preventive interventions including simultaneous assessment and reduction of many individual's predisposing and situational risk factors for falls can significantly decrease the risk of falling (4,15,20,21). These elderly people should receive individualized form of attention and undergo clinical risk assessment. A family physician or geriatric specialist can do the assessment. Discouraging use of over-the-counter medication, a targeted neurological examination, evaluation of bone mineral density, initiation of community based exercise programs and proper architectural designing of house may reduce the likelihood of fall.

CONCLUSION:

Fall-induced deaths are preventable deaths. The present study identifies some possible factors in causation of fall-induced deaths. Associations of coexisting chronic diseases, unfavorable environmental factors, potential hypotension, indiscriminate use of pharmacological agents and diminished vision with growing age are some of the important risk factors. Further studies are needed to identify other risk indicators. It is a high time that a comprehensive prevention policy should to be sought and implemented to reduce the likelihood of fall induced injuries and death among this vulnerable group of people.

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Original Paper

CURRENT TRENDS IN SUDDEN NATURAL DEATHS

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Original Paper

CURRENT TRENDS IN SUDDEN NATURAL DEATHS

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ABSTRACT:

Although natural deaths comprise a large proportion of the cases seen in the forensic setting, the investigation of these cases remains a unique challenge. Sudden deaths are important from a medicolegal standpoint as they raise suspicion of foul play. The current trends in sudden death that eventually turn natural are investigated during the three year study period, from 1st September, 2006 to 31st August, 2009, a total of 2884 medico-legal postmortem examinations (autopsies) were performed at the centre, out of which 33.46% were diagnosed as natural deaths. Two hundred thirty natural deaths (7.98% of the total) were sudden. Maximum number of sudden natural deaths i.e. 88.70% cases were seen in individuals above 30 years of age with peak incidence in the age group of 51-60 years with 25.65% cases. The mean age of the victims was 51.04 years. Males constituted 82.61% while females were 17.39%, and the male to female ratio was 4.75:1.

It was observed that maximum deaths were related to cardiovascular (CVS) 75.22%, followed by respiratory system RS 15.65%. Maximum deaths were due to coronary artery disease 70.43 %, followed by lobar pneumonia 10%, bronchopneumonia 3.48%.

KEYWORDS: Sudden natural deaths, sudden deaths, Coronary artery disease, cardiovascular system, Mumbai.

INTRODUCTION:

Although natural deaths comprise a large proportion of the cases seen in the forensic setting, the investigation of these cases remains a unique challenge¹.

Commonly, medicolegal autopsies are conducted in cases of sudden and unexpected deaths primarily to establish the cause of death in cases where such deaths have occurred in apparently healthy individuals under suspicious circumstances. The outcome may quite often reveal some natural disease, the presence of which may trigger issues like association of the disease with trauma, work, crime, etc. and its relative contribution towards death. The association of disease with trauma may have criminal aspect or may involve compensation benefits for the relatives².

Sudden deaths are important from a medicolegal standpoint as they raise suspicion of foul play³.

The current trends in sudden death that eventually turn natural are investigated in this study.

MATERIAL AND METHODS:

The present study was carried out in the postmortem center attached to Topiwala National Medical College & B Y L Nair Ch. Hospital a University teaching hospital in Mumbai. The following cases with history of sudden natural death were included:

1. Cases that were brought dead by any of the nearby police stations.
2. Cases that were admitted to this hospital (either directly or as a transfer from any other hospital) and died within 24 hours of onset of signs and symptoms.

The detailed post mortem examination was carried out in each case comprising of an external and an internal examination of body, gross and histopathological examination of organs were done.

OBSERVATIONS & RESULTS:

During the three year study period, from 1st September, 2006 to 31st August, 2009, a total of 2884 medico-legal postmortem examinations (autopsies) were performed at the centre, out of which 965 (33.46%) were diagnosed as natural deaths. Two hundred thirty natural deaths (7.98% of the total) were sudden.

It was observed that maximum deaths were related to CVS 173 (75.22%), followed by RS 36 (15.65%), gastrointestinal (G.I.) and central nervous system (CNS) 9 (3.91%) each. The least cases were of genitourinary system (GUS) 3 (1.3%). Maximum deaths were due to coronary artery disease (CAD) 162 cases (70.43 %), followed by lobar pneumonia 23 cases (10%), bronchopneumonia 8 cases (3.48%).

Maximum number of sudden natural deaths i.e. 204 (88.70%) cases were seen in individuals above 30 years of age with peak incidence in the age group of 51-60 years with 59 (25.65%) cases. The least affected age group was 0-10 years with 4 cases. The mean age of the victims was 51.04 years. Males constituted 82.61% while females were 17.39%, and the male to female ratio was 4.75:1.

In this study maximum CVS deaths (50, 21.74%) were seen 51-60 years and CAD deaths were seen also in same age group, RS deaths (9, 3.91%) in 31-40 years.

DISCUSSION:

In the present study, incidence of sudden natural deaths coincides with the studies of Siboni et al⁴, Zanjad et al⁵ and Rao et al⁶. It does not coincide with studies of Kuller et al⁷, Escoffery et al⁸ and Derya AA⁹ possibly due to different geographical areas and different constitution and life styles of people.

The peak incidence of sudden natural deaths was in the age group of 51-60 years has significant effect of various risk factors along with physical and mental stress and the peak coincides with studies of Derya AA⁹ and Rao et al⁶. It does not coincide with the studies of Escoffery et al⁸ and Zanjad et al⁵.

In our studies as well as most of the other studies males vastly outnumber the females.

In relation to sudden natural death and system wise involvement it coincides with studies of Luke et al¹⁰, Sarkioja et al¹¹, Topaz and Edwards¹², Siboni et al⁴, Anderson et al¹³, Zanjad et al⁵, Kumar et al¹⁴, Derya A. A⁹. and Rao et al⁶.

Sudden natural death and cause of death wise distribution this coincide with the studies of Luke et al¹⁰, Sarkioja et al¹¹, Zanjad et al⁵, Rao et al⁶. Preponderance to cardiovascular diseases is due to various risk factors, physical and mental stress and food habits, addictions and lack of exercise which affect the mostly cardiovascular system.

Workers in industries, mills, shops and other sectors constituted highest number of cases i.e. 56 (24.35%). It coincides with study of Kumar et al¹⁴. The preponderance in this group is possibly due to low socioeconomic status, neglect of alarming symptoms of illness, non affording treatment, physical and mental stress etc.

Most of the victims were from the lower middle class 84 (36.52%), followed by the lower class 48 (20.87%) followed upper middle class 45 (19.57%), upper. The more preponderance in lower middle class and lower class is due to low affordability and less accessibility to medical facilities.

The time of onset of symptoms was between 06 a.m. to 12 noon in 74 (32.17%) cases, followed by the 12 noon to 06 p.m. in 68 (29.57%) cases. In the morning hours because there is more stress of daily schedule, transportation, fulfilment of duties etc. and that could explain the higher frequency.

It was observed that only 15 (6.52%) cases were admitted to hospital, 202 (87.83%) cases were declared dead on arrival at hospital and 13 (5.65%) were found dead or declared dead at spot. It coincides with studies of Spain et al¹⁵ and Rao et al⁶ however it does not coincide with studies of Luke et al¹⁰, Derya A A⁹ and Fornes et al¹⁶. Many sudden deaths are declared dead only after arrival to hospital and that could be the reason for higher number of these cases.

Out of 230 cases, 122 (53.04%) cases died within 1 hour of onset of symptoms, 95 (41.30%) died within 1 to 24 hours of onset of symptoms, 13 (5.65%) cases period of survival were not known. It coincides with study of cases 118 (64.48%) of Scott et al¹⁷. Hypertension (28 cases) and smoking (18 cases) was commonest risk factors for coronary artery disease.

CONCLUSION:

Sudden natural death has an important place in all medicolegal autopsies. In this study we observed striking number of sudden natural deaths.

The suddenness and unexpectedness of deaths and their frequent occurrence should be considered in planning emergency services to tackle the immediate events prior to death.

To prevent sudden natural deaths it is essential the population should be educated and trained for early identification of symptoms of common sudden natural deaths. The patients and their relatives should not ignore the alarming signs and symptoms and avail medical treatment at the earliest. The population should be educated to undergo annual health checkups for early diagnosis and treatment of avoidable diseases. Deaths can be prevented by early screening of risk factors and familial diseases. Modifiable (acquired) risk factors like hypertension, smoking, tobacco chewing, alcoholism can be reduced with timely help of health education, counseling and medical treatment.

Deaths can also be decreased with easy and fast transport system, trained professionals and treatment at affordable cost at the emergency medical service. These are the few suggestions to prevent sudden natural deaths.

Table 1: Incidence of natural and sudden natural death

| Year | Total number of autopsies | Natural deaths | % | Sudden natural deaths | % |
|-------|---------------------------|----------------|-------|-----------------------|------|
| 2006 | 383 | 164 | 42.82 | 34 | 8.88 |
| 2007 | 1075 | 359 | 33.4 | 72 | 6.7 |
| 2008 | 933 | 284 | 30.84 | 79 | 8.47 |
| 2009 | 493 | 158 | 32.05 | 45 | 9.13 |
| Total | 2884 | 965 | 33.46 | 230 | 7.98 |

Table 2 Cause of death wise distribution

| System | Cause of death | Total | % | |
|-------------------|-------------------------------|--------------------|------|-------|
| CVS | Coronary artery disease (CAD) | A.C.I. | 84 | 36.52 |
| | | A.C.I. with O.M.I. | 71 | 30.87 |
| | | A.M.I. | 7 | 3.04 |
| | | Total | 162 | 70.43 |
| | Mitral stenosis | 4 | 1.74 | |
| Cardiac tamponade | 5 | 2.17 | | |

| | | | |
|--------------|---|------------|--------------|
| | Dilated cardiomyopathy | 2 | 0.87 |
| | Total CVS cases | 173 | 75.22 |
| RS | Lobar pneumonia | 23 | 10 |
| | Bronchopneumonia | 8 | 3.48 |
| | Tuberculosis | 2 | 0.87 |
| | COPD | 2 | 0.87 |
| | Pulmonary oedema | 1 | 0.43 |
| | Total RS cases | 36 | 15.65 |
| GIT | Rupture of varices | 5 | 2.17 |
| | Bleeding peptic ulcer | 1 | 0.43 |
| | Haemorrhagic Gastroenteritis | 1 | 0.43 |
| | Haemorrhagic pancreatitis | 1 | 0.43 |
| | Peritonitis (perforation of peptic ulcer) | 1 | 0.43 |
| | Total GI cases | 9 | 3.91 |
| CNS | Intra cranial hemorrhage | 5 | 2.17 |
| | Meningitis | 3 | 1.3 |
| | Epilepsy | 1 | 0.43 |
| | Total CNS cases | 9 | 3.91 |
| GUS | Uterine haemorrhage | 2 | 0.87 |
| | Nephritis | 1 | 0.43 |
| | Total GUS cases | 3 | 3.91 |
| Total | | 230 | 100 |

A.C.I. – Acute coronary insufficiency
O.M.I.- Old Myocardial infarction
A.M.I.- Acute Myocardial Infarction
COPD- Chronic Obstructive Pulmonary Disease

Table 3 Age and sex wise distribution

| Age Group \ Sex | 0-10 yrs | 1-20 yrs | 1-30 yrs | 31-40 yrs | 41-50 yrs | 51-60 yrs | 61-70 yrs | 71-80 yrs | more than 81 yrs | Total |
|-----------------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|------------------|-------|
| Male | 2 | 4 | 13 | 29 | 42 | 52 | 37 | 8 | 3 | 190 |
| Female | 2 | 1 | 4 | 5 | 4 | 7 | 11 | 3 | 3 | 40 |
| Total | 4 | 5 | 17 | 34 | 46 | 59 | 48 | 11 | 6 | 230 |

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PHOTOGRAPHS:

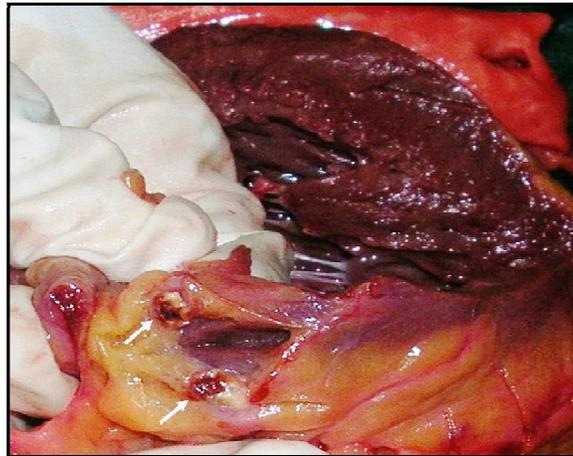


Fig. 1 Thrombus in left anterior descending coronary artery

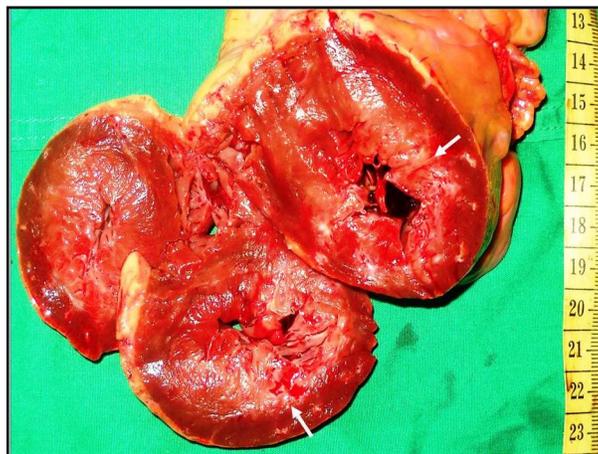


Fig. 2 Circumferential acute myocardial infarction with left ventricular hypertrophy



Fig. 3 More than 75% atherosclerotic block with thrombosis (HE 4X)

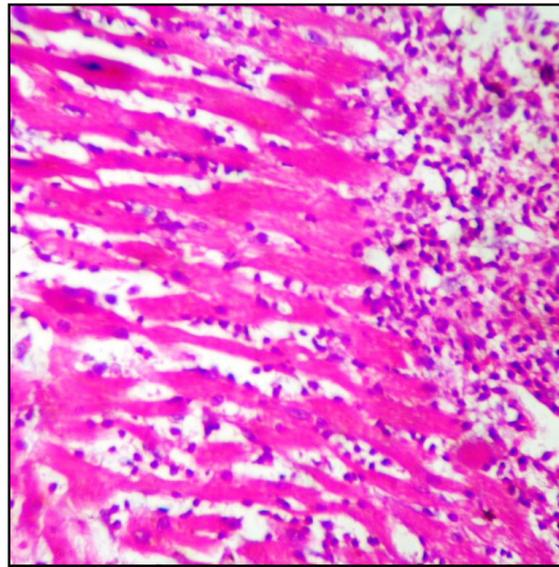


Fig. 4 Infiltration of acute inflammatory cells in cardiac muscle fibres, with necrosis of muscle fibres and loss of wavy pattern (HE 10X)

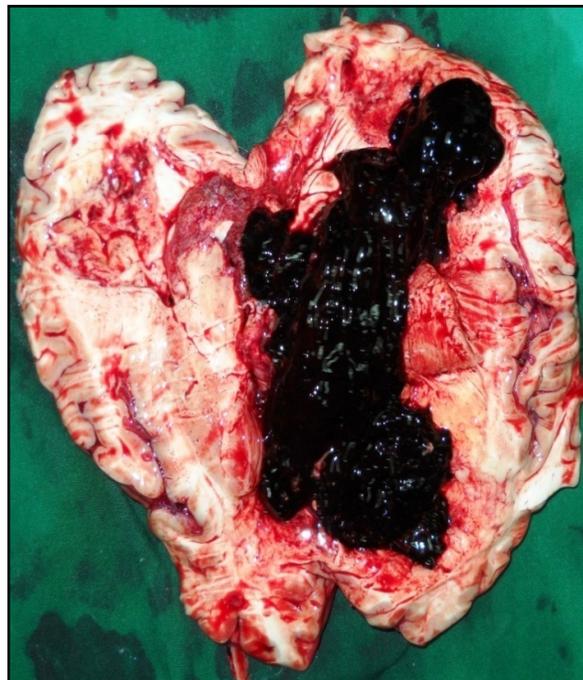


Fig. 5 Intraventricular haemorrhage

Original Paper

**USING CINEMA AND VIDEO CLIPS IN FORENSIC MEDICINE TEACHING:
AN INNOVATIVE APPROACH**

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Original Paper

USING CINEMA AND VIDEO CLIPS IN FORENSIC MEDICINE TEACHING: AN INNOVATIVE APPROACH

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ABSTRACT:

Context-Cinema and video clips seems to be a promising teaching module in Forensic Medicine. This module has shown to produce permanent impact on students. Study demonstrated its usefulness and effectiveness in students' reflection and professional attitude. It is an innovative approach for gaining students attention. Cinema clips "catches the imagination" and helps to remember facts permanently. It also helps to prepare medical students moral and ethical questions they will face in their professional lives. Our study evaluates impact of this technique on second year M.B.B.S. students.

KEY WORDS: cinema, concentration, knowledge etc.

INTRODUCTION:

Forensic Medicine deals with application of scientific medical knowledge for dispensation of justice in court of law.

In the teaching process of forensic medicine, a teacher, should always concentrate on student's affective domain. This subject deals with humanistic aspects of medicine such as ethics, human values, mental health and sexual offences etc. Student's reflective process plays important role in refining attitude and ethics. In old days, ethics were taught to us through story telling by our grandparents.

Cinema is an audio –visual form of storytelling. Many Cinemas are based on real life stories which can be an effective tool in teaching of forensic medicine.¹The cinema and video clips were first used in medical education in 1890².Cinema clips provide quick and direct teaching scenario in which specific scenes point out important issues and emotions. This module of teaching can be more useful because of its short duration sessions, rapidity and more emotional intensity³. This novel approach can also promote students' reflective process which can make a significant change in their cognitive as well as emotional domains.

In this study cinema clips are used to teach ethics, court procedures, mental illness, communication skills and human values. The purpose of this study is to evaluate student's perception about this novel module in teaching of Forensic Medicine.

MATERIALS AND METHODS:

Present study was carried out in the Department of Forensic Medicine of Padmashri Dr.VitthalraoVikhe Patil Foundation's Medical College, Ahmednagar.

Lecture series consisting of **total five lectures of one hour duration** were conducted for the fifth term second year M. B.B. S. Students. Following were the topics covered in each lecture respectively:

1. Court procedure
2. Ethics, human values and communication skills
3. Mental illnesses
4. Medical negligence
5. Rape examinations

Before the application of this series students were briefed about this teaching module in short.

Each lecture was split into:

- Explanation of the theoretical part about the topic was covered for approx. 20 minutes. (Topic enlisted above).
- Cinema or video clips related to the topic were shown for approx. 5mins. (Table I)

Table 1: Lecture Series With The Cinema Or A Video Clip Displayed

| Lecture No. | Topic | Cinema/ Video Clip | Language | Details |
|-------------|----------------------|--------------------|----------|--|
| 1 | Court procedures | Cinema | Hindi | Damini |
| 2 | Ethics Human values | Cinema | Marathi | Gost Choti DongraEvadi JhingChikJhing |
| | | | Hindi | Hindusthani MunnabhaiM.B.B.S. |
| | Communication skills | | Marathi | Shwas |
| 3 | Mental illness | Cinema | Marathi | De Dhakka |
| | | Video clip | | Obsessive Compulsive disorder. |
| 4 | Medical Negligence | Cinema | Hindi | Kambakth ishq |
| | | Video clip | | Violence at hospital (news clip). |
| 5 | Rape examination | Video clips | | Courtesy Dr.Kapse sir (Senior Professor and HOD of Forensic Medicine). |

After completion of the lecture series (i.e. all 5 lectures) feedback from students were taken with the help of the questioner. Complete feedback was obtained from **71** students out of total **83** students. Data was collected, tabulated, observations were drawn and results were obtained.

Table 2: Results

| Sr. No. | Teaching Module Utility | Totally Disagree | Partly Disagree | Agree | Strongly Agree |
|---------|--|------------------|-----------------|-------------|----------------|
| 1 | Increase in concentration during lectures. | 0 (0 %) | 6 (8.45%) | 30 (42.25%) | 35 (49.30%) |
| 2 | Increase in Memory retention | 0 (0 %) | 3 (4.22%) | 24 (33.80%) | 44 (61.97%) |
| 3 | Increase knowledge about subject. | 0 (0 %) | 6 (8.45%) | 23 (32.39%) | 42 (59.15%) |
| 4 | Change in attitude towards patients | 1 (1.40%) | 7 (9.85%) | 18 (25.35%) | 45 (63.38%) |
| 5 | Increase in practical skills and confidence of medico legal work | 2 (2.80%) | 7 (9.85%) | 21 (29.57%) | 41 (57.74%) |

In the feedback form questioner one important question answered by the student was:

Why did you like this innovative study?

The summary of the reply by significant number of the students is enlisted below:

- **Conceptual clarity ,**
- **Strong impregnation of moral values on mind,**
- **Sensitised to life's reality situations constantly occurring in society,**
- **Teaches practical aspect of subject and its implementation ,**
- **Lectures were interesting.**

DISCUSSION:

Cinema has been used in 20th century for surgical procedures, health education and psychology. The Brazilian society of family medicine conducted project titled "Literature and movie for medical students". Their study demonstrated its usefulness and effectiveness in students' reflection and professional attitude. In recent times use of video films in medicine is becoming popular.⁴ Ernst et al reported use of video and digital images for first year medical students to teach gross anatomy⁵. Roter Dl et.al reported effective use of cinema and video clips in teaching of communication skills⁵. The Royal colleges of general practitioner has introduced use of video films for student's skill assessment and doctor patient interactions.⁵

Our study reveals that 84% students agreed that this innovative technique is helpful to increase their concentration during lectures. It is scientifically proved that after each 15-20 min of didactic lectures concentration graph falls. With this technique after teaching theoretical part followed by cinema / video clips show (display) helped the students to increase their concentration due to break in theoretical, explanatory verbal monotony. Both the senses i.e. auditory and visual domain is involved in this module which might increase the concentrating ability and duration. Wong RY et.al quoted in his study that this technique "captures students attention and increases concentration".⁶

In the present study, 94 % students felt that this technique will be helpful in increasing their memory. A picture paints the thousand words in the mind then imagines the effectiveness of moving picture. This movie clips are helpful to memorise the certain important issues. The observations of Erle et.al. and our study coincides i.e. 95% students agreed that it will help for remembering facts better. Scientific study showed that when many special senses like visual, auditory, emotions are involved, it will imprint permanently on the student mind.^{5,7}

In this study 91% students felt that this technique will increase their knowledge about subject. With this techniques student self-interest and enthusiasm about subject is increased which is indirectly helpful to increase knowledge about subject. Similar findings are also noted by Erle et. al. study.⁵

Our study also reveals that 89% students strongly agreed that it will change their attitude towards patient. Changing anybody's attitude is almost difficult task. Watching emotional cinema clip, may cause permanent impact on persons mind and force him for introspection which may change his attitude. According to Pablo Gonzalez Blasco, this technique helps in building humanistic perspective of doctoring. Through humanities and art, doctors are able to understand patient in their whole context.

Students identify easily with their film characters and movie and with their reflective attitude gain new insights into many important aspects of life and human relationships.^{8,9}

Among the many medical practitioner there is phobia for doing medico legal work. Watching different video clips related to examination of different Medico legal cases such as rape case, injury case etc. these professionals may gain confidence and skills to perform and handle medico legal cases. In our study 86% students felt that it will increase their skills and

confidence regarding medico legal work. Timothy s et.al.also noted that there is decrease in fear of examination of mentally ill person by watching video films related to different mental illnesses.¹⁰

Teaching medical students about ethics and moral values can be challenging. The use of popular films can help to make this process more interesting and effective. So Cinema have place in medical education. Students find this technique beneficial to increase their concentration, memory, knowledge, attitude and skills. Education should be more than simple training, which refers only acquisition of skills, but it should also teach to remain sensitive to the human conditions and its infinite possibilities. Our study demonstrated that use of cinema and video clips are useful and enjoyable way of teaching that effectively stimulate reflection on the personal and professional attitude and values of medical students. Let's hope that, teaching Forensic medicine by using cinema and video clips will increase students' reflection, promote empathetic attitude, will enrich professional values and lastly will help in developing well rounded qualities in students.

CONCLUSION:

This study concludes that using cinema and video clips in forensic medicine teaching can be a new, innovative and highly effective module of education for medical students.

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Review Paper

BIOLOGICAL SAFETY IN POST-MORTEM ROOMS- A CONCERN.

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Review Paper

BIOLOGICAL SAFETY IN POST-MORTEM ROOMS- A CONCERN.

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Dr. P Bokaria, Dr. SK. Patond, Diwarkar Pradhan

ABSTRACT:

We the Forensic Experts and Co-workers in autopsy room are in always threat to acquire life threatening infections while working for a cause of medico- legal work. All over the world cases of seroconversion are being reported while working with cadavers and organic matter. Forensic pathologists/Autopsy surgeons and the forensic medicine personnel assisting to conduct an autopsy who come in direct contact with the body fluids, soft tissues of the dead and skeletal remains in different stages of decomposition, are at a continuous risk of acquiring various kinds of infections including blood-borne viral and other bacterial infections. However, limited data are available regarding these occupational risks to the persons who are usually exposed to dead bodies in the autopsy rooms. With the existing and growing HIV epidemic and high seroprevalence of hepatitis virus, safety becomes an issue not only relevant to the team performing the autopsy, but also has direct implications regarding the protection of the environment. Prevention strategies including immunization, exposure avoidance by the use of universal precautions and proper infrastructure in the autopsy rooms can go a long way in preventing the occupational hazards of the autopsy rooms. In present review we are making focus on various ways of spreading infections and measures to abort infections for safer life of Forensic Experts and Co-workers working for noble cause.

KEY WORDS: Forensic experts and cowerkers, threat, occupational hazards, prevention Strategies, noble cause.

INTRODUCTION:

The most important factor in ensuring well being of the Forensic Experts and co-workers the remains the Forensic Expert. Inherent risk for Forensic experts and importance of good safety practice is long recognised. Before chemotherapy, streptococcal septicaemia, Tuberculosis was common. The general principles of recognition securing safety in Autopsy room involves proper management including of risk, identification of hazards, when hazards can not be eliminated protective measures should be taken to protect the workers from the risk[1].

Hazard: - The ability of scalpel, saw and needle to inflict injury represents a 'hazard'.

Risk: - Acquiring Hepatitis B from such an injury represents a 'Risk'.

The autopsy room has always been a potential source of infection and the autopsy surgeons/forensic pathologists and other persons engaged directly or indirectly in conducting postmortem examination are at greater risk of exposure to blood-borne viruses and other infections including human immunodeficiency virus, hepatitis B, hepatitis C, hepatitis D and G viruses, non-A, non-B hepatitis, tuberculosis, Creutzfeldt Jakob disease, herpes, hantavirus pulmonary syndrome, smallpox, human T-cell lymphotropic virus type I and infections from other pathogenic organisms . Throughout the world, the frequency of consent autopsies has substantially declined over the previous decades, from approximately 50% of all hospital

deaths in 1950 to less than 10% in 1995. One of the main reasons for this decrease is the increased risk of occupational exposure to dangerous pathogens among the Forensic pathologists. Many studies have confirmed that with the cessation of life, certain pathogenic bacteria are released, which if left unchecked, may prove hazardous to the personnel dealing with them. Moreover, after death, there is neither the reticulo-endothelial system nor the blood-brain barrier to restrict the translocation of micro-organisms and the pathogens translocate themselves unrestricted within the dead body [2].

Quite often, the dead bodies brought for postmortem examination, are of unknown background and as such the risks of infection from these bodies are also unknown. Prevalence of deadly infections in individuals such as drug abusers, who are liable to meet violent unexplained deaths and the existence of social and ethical pressures which restrict the availability of information, combine to create significant risk for postmortem examination room worker. Concerned risk today is the infection caused by HIV and blood borne hepatitis [3]. A study from 'Dublin' has reported the prevalence of human immunodeficiency virus HIV and hepatitis C virus HCV among injecting drug users to be 1.2 and 61.8% respectively. According to a report, contaminated injections caused an estimated 21 million hepatitis B virus (HBV) infections, 2 million HCV infections and 260,000 HIV infections accounting for 32, 40 and 5% respectively of new infections for a burden of 9,177,679 disability-adjusted life years between 2000 and 2030. According to another study, the baseline seroprevalence of (HIV), (HBV), (HCV) and Cytomegalovirus (CMV) infection were 0%, 21.7, 1.4 and 43.4% respectively [2].

Human Immunodeficiency virus (HIV)

Risk of acquiring HIV infection because of single sharp injury involving HIV infected blood is 0.3% to 0.5%³. HIV not acquired by inhaling contaminated aerosol except possibly when virus is handled in concentrated forms. Infection can occur due to splashing of infected blood into mouth or conjunctiva. HIV remains viable in refrigerated cadaver upto 6 days. Concentrated suspensions of HIV on surfaces retained infectivity for some days. Unprotected virus readily destroyed by sterilisation process including heat and chemical agent like hypochlorite and glutaraldehyde. Virus less killed in the presence of dried blood or other organic matter. Global pandemic of HIV toll increasing day by day –route of spread is heterosexual infecting drugs, blood products, tissue transfer. High risk unlikely to be tested unless they are clinically ill and hence remain unidentified for years. So forensic Experts and other mortuary staff should adhere vigorously to good infection control practice and universal precautions.

Hepatitis

Hepatitis B, C and D and G poses potential risk to mortuary staff. Self precaution to be taken like of HIV. Hepatitis virus may be present in the blood and tissues in the absence of clinical manifestations. The risk of transmission to Health Care Workers following a sharp, needle stick injury has been shown to be around **one in three** when E-Antigen is positive and **one in twenty** when HbsAg is detected. Immunisation for Hepatitis B is available to date; there is no available vaccine against HepC. All recognised hepatitis virus are destroyed by sterilisation i.e. by heat or chemical such as Sodium hypochlorite and Glutaraldehyde.

Prion Agents

Transmissible spongiform Encephalopathy (TSE) known as Prion Agents include CJD and VCJD. Newer tissue possesses the highest risk, spinal fluid and lymph reticular tissue a lower risk and blood and other body fluids possess negligible risk. Cases documented that CJD

transmitted to health workers accidentally via contaminated medical instruments, contaminated pituitary hormones prepared from Human Cadavers or handling of nervous tissue. TSE Agents exhibit unusual resistance to conventional physical and chemical de-contamination methods. Brain, spinal cord, eyes of suspected patients can be categorised as High Risk for the purposes of taking precautions and safe practice. Recent evidence suggests the presence of prion agents in lymphoid tissue (appendicitis and tonsils) in patients before the appearance of neurological manifestations. A more cautious approach should be taken towards medical interventions in order to minimize the risk of transmission.

Tuberculosis

Tuberculosis is global problem. Several factors thought to contribute to TB as demographic changes, immigration, poverty and homelessness and to some extent HIV epidemic. Emergence of drug resistance tuberculosis is world wide problem. The transmission of T.B. to mortuary staff is due to inhalation of organisms in the post mortem rooms. Lungs are the usual sources of T.B. particularly when sliced with potential creation of contaminated aerosols. Mycobacterium T.B. infection occurs by inhalation of aerosols created by running water running into the sink. These modes of transmission should be focussed. Mortuary workers should be immunised with BCG. Tubercle bacilli are sterilized by heat and disinfection like Phenolics and Gluteraldehyde. However require prolonged exposure because of robust nature of microbial cell wall.

Highly Dangerous Infections.

When cause of death is clinically known or suspected to be dangerous infection, body should be labelled to indicate the risk of infection. In abroad countries in extremely dangerous infection, it is considered not to carry autopsy or to perform a limited examination. In U.K, Post-mortem examination is prohibited in case of category IV infections (Viral haemorrhagic fever) and certain encephalitis unless it is performed in a designed mortuary. In the case of category III infections it is recommended that autopsy should not be performed routinely. Only in special cases staff involved must be limited to 3 i.e. pathologists, assistant and a circulator. All must be fully trained mortuary techniques and safety procedures. In fact number of known cases of dangerous infections which Forensic Experts are asked to examine is very small but in contrast large number of cases are required to examine routinely who died suddenly outside the hospital and no previous medical history is there.

Categories of the Pathogens with their associated risks [4]

- | | |
|----------------|--|
| Hazard group 1 | an organism that is most unlikely to cause Human disease. |
| Hazard group 2 | organism may cause human disease and might be hazard to autopsy workers but unlikely to spread to community. Autopsy exposure rarely produces infection and effective prophylaxis and /or treatment usually exist. |
| Hazard group 3 | organism may cause severe human disease and presents serious hazard to autopsy workers. May spread to community but there is usually effective prophylaxis and/or treatment. |
| Hazard group 4 | organism as 'group 3' but has high risk of community spread and usually no effective prophylaxis or treatment is available. |

Hazards

Infection is acquired by one or more of the following routes- Inhalation, Ingestion, Inoculation or entry through pre-existing cuts and abrasions in the skin. Entry through the conjunctiva and mouth.

Inhalation

Squeezing, careless handling, spraying of the organs, sawing of the bones leads to the aerosol formation which contains dangerous microorganisms. In Tuberculosis it is the commonest route of transmission. Aerosols may lead to the contamination of the surfaces and instruments which acts as vehicle of infection. In a survey done in UK by 'Babb et al' in 1989 it is found that total number of bacteria in the air appear to be related mainly to the number of staff working in the mortuary and the degree of the movement which took place [5]. Gram negative bacteria derived from the cadaver surprisingly increased during the bowel removal and washing of the intestine. During other procedures air count of gram negative bacilli was surprisingly low. Opening, dissection, washing of the bowel leads to heavy contamination of workers and surrounding surfaces with intestinal bacteria such as salmonella.

Inoculation and entry through cuts and abrasions or diseased skin.

These are principal routes for HIV, HBV, HCV leptospirosis and Brucellosis which are transmitted through infected blood and body fluids. Infection may arise through penetration of the skin by contaminated sharp object or through contamination of existing skin lesions. Possibility of glove rupture is less but that of minor prick and scratches of gloves are very high causing contamination. The risk of acquiring HIV in single mucocutaneous exposure is less than 1 in 2000. It is associated with splashing of blood and flying of fragments of bone in mouth or conjunctiva [6].

Measures to be followed

The unknown risk is probably the greatest risk of all. For that routine safety precautions adopted must be an unfailingly high standard. Since presence of dangerous infection is not always easily identifiable, the prime object in ensuring safety must be the establishment of a series of barriers designed to protect against all possible hazards. Barriers need to be established at three levels.

- 1) **Primary barrier**:-around perceived hazards.
- 2) **Secondary barrier**:-around the workers.
- 3) **Tertiary barrier**:-around the autopsy room.

Primary barriers:

Related with physical facilities in the autopsy room and the techniques in use within it.

a) Physical facilities:-

Autopsy room must be sufficient in size to accommodate the workload without overcrowding and to permit free movement. Easy through cleaning and disinfection of autopsy tables, dissecting surfaces, floor, gullies and walls. Adequate facility for body storage. Adequate accommodation for change, wash and shower. Attention to lighting and ventilation. Bacterial counts are rare in autopsy rooms with mechanically assisted ventilation. Body store, examination, dirty utility rooms, staff changing room should have dedicated supply and extract ventilation plant [7]. Additional air extraction while sawing bones and reducing exposure to Gluteraldehyde and Formaldehyde fumes, increasing comfort thereby increasing safety in autopsy rooms. In abroad countries autopsy suites are designed for 'high risk' infection autopsies.

b) Techniques and working practices

Sticking to Safe working practices, understanding of the consequences of disregarding the established procedure is very much required. Distinction between 'clean' and 'dirty' areas of mortuary is mandatory. Organs must be handled and sectioned with care since squeezing and rough manipulation leads to arousal formation and of splashing. In Tuberculosis 10% Formalin should be introduced in lungs after appropriate microbiological sampling specimen have been taken before examination. High pressure water sprays causing aerosols and splashing should be avoided. Intestines should be opened under water but not under a running tap. Saw must either fitted with local exhaust ventilation or used within an exhaust ventilated enclosure. Injuries from sharp object and like cut edge of bone i.e. ribs can be minimised by putting surgical towel over edges and cutting through cartilaginous portion immediately medial to the costochondral junction with Hand-Cutter. Particular care is must while using sharp instruments in places of poor visibilities like pelvis. Gloves must be removed before handling case notes, door handles and specimen containers. Telephones that can be used without handling, if this is not possible Telephones should not be touched with gloved/unwashed hands. Photographic equipments should also be prevented from contamination. Boots and overshoes must not be worn outside the autopsy suit. Instruments should be autoclaved in a steam sterilizer. Tables dissecting surfaces, scales, suction apparatus, boots, aprons, reusable heavy duty gloves must be thoroughly washed with water and decontaminated with disinfectant. Before using disinfectant through cleaning should be done. All disinfectants must be ready prepared. Diluted disinfectants must not be stored. Gloves, aprons and eye protection for workers handling disinfectants. Pacemaker/other implant removed before cremation must be decontaminated eg. with Glutraldehyde before disposal or further examination. In suspected case of CJD or variant of CJD disposable equipments must be used. If any item cannot be discarded it must be autoclaved at 134-138⁰c for not less than 18 min. or for six separate cycles of 3 min each at same temperature. For decontamination of surface in this situation Sodium Hypochlorite 20,000(ppm) reduces risk of infectivity.

Secondary Barriers:

It includes protective clothing, education and practice of personal hygiene and the provision of medical welfare services (Immunisation).

a) Protective clothing

Forensic pathologist and his/her assistant should change into protective clothing similar to that owned in an operation theatre. Gloves, water proof boots and aprons must be worn. Apron should be long enough to reach below the ankles. Boots should have dorsal steel reinforcement so as to protect against penetration by faculty instrument. Gloves should be of adequate size and should be changed if torned or punctured. Existing cuts and abrasions on the hands and arms should be covered by waterproof dressing. Gloves made of finely woven stainless steel fabric will resist the usual type of cutting injury. Eye protection should be sworn by all autopsy workers to guard from risk of splashing of body fluids and flying fragments of bones i.e. Standardised Spectacles or one piece plastic visor [8].

b) Personal Hygiene:-

Prohibition of smoking drinking eating and application of cosmetics in the working area, and hand washing before staff leaves the area to prevent the chances of getting infection.

c) The Medical Welfare Services:-

It includes pre-employment health screening immunisation, follow up of the consequences of untold incidence which carries potential risk of infection. BCG vaccination and X-ray chest examination should be done. In case of symptoms like prolonged unexplained cough, fever, weight loss. Autopsy room workers should be protected against tetanus. Immunisation against poliomyelitis if not immunised in infancy. Immunisation against hepatitis B. The immediate treatment after following an accident includes copious washing soap water for the skin. If there is visible wound free bleeding should be encouraged. Any accidents while handling HIV positive cases Zidovudine is considered as post exposure chemoprophylaxis [9]. Staff should be issued with medical contact card showing name address & telephone number of their own doctor, senior medical qualified person, safety officer and the nature of their work.

Tertiary Barriers:

It includes to prevent risk of infection to other hospital staff and to the community.

a) Care of visitors-

A physical barrier or a clearly identifiable demarcating line between clean & dirty area should be present to prevent entry by unauthorised persons. Separate gallery with a separate access for the observer so that observer do not have to cross the floor of the working area is required. If this is not the case and the observer has to stand in the close proximity to the autopsy table, the appropriate protective clothing should be provided. Transparent splash guards should be fitted around the organ dissecting area. Demonstration unfixed organs should not be given in cases of T.B., HIV, Hepatitis or CJD. Local arrangements must be made to safeguard relatives of the deceased who wish to view the body, ambulance staff and undertakers. A proper record of the decontamination must be kept by a designated person.

b) Transport of specimens:-

All specimens intended for laboratory for laboratory examination must be packed and labelled in such a way that they present no risk to the staff who transport them or to the staff who will subsequently examine them. The containers should be robust and leak proof and exertion should not be contaminated with blood or other body fluid. Container should be enclosed with a sealable plastic bag of a suitable design. Accompanying request form should not be in contact with the specimen. If specimen is of high risk clear indication of high risk such as danger of infections or category 3 risk in black letters in a yellow background should be returned on a container.

c) Disposal of body:-

Wounds and incisions must be covered to prevent leakage if infected body of category 3 risk should be enclosed in a plastic bag and undertakers must be warned the risk.

The conclusion of the Matter

Simple measures defined policies, codes of practice, and scrupulously administration is adequate in most of the cases in autopsy room. The In-charge has to be actively concerned to ensure safety and to be able to communicate this concern effectively to the staff and to have the necessary authority to ensure that his/her instructions are carried out. A provision of adequate training and recognised qualification is essential for all autopsy room workers. Forensic Experts is the one to ensure that this all take place properly.

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Review Paper

**RECENT ADVANCES IN THE MANAGEMENT OF TYPE II DIABETES
MELLITUS**

Dr. RR Jadhav, Dr. SL Padwal, Dr. VM Motghare, Dr. VS Deshmukh, Dr. BS Khaire

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Review Paper

RECENT ADVANCES IN THE MANAGEMENT OF TYPE II DIABETES MELLITUS

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ABSTRACT:

Diabetes Mellitus is a chronic metabolic disorder. Current medications available for management of diabetes are able to control the blood sugar levels satisfactorily, they are associated with side effects like hypoglycemia and resistance. Hence there is a continued search for newer group of hypoglycemic agents to deal with this pandemic.

Drug therapy for type 2 diabetes aims to control blood sugar levels both in the basal (fasting) and postprandial state; rational combinations of agents with different mechanisms of action can be used.

Recently novel categories of antihyperglycemic therapies have emerged for management of DM. The newer anti-diabetic medications with their compelling characteristics are being used as an adjuvant to the current medicines as combination therapy, with promising results. Further studies should, however, be carried out for the risk benefit and cost benefit analysis of these newer drugs.

KEY WORDS: Diabetes Mellitus, Antihyperglycemic Agents, Newer Drugs,

INTRODUCTION:

The number of people with diabetes is increasing due to population growth, aging, urbanization, and increasing prevalence of obesity and physical inactivity. The number of cases of diabetes worldwide in 2000 among adults 20 years of age is estimated to be 171 million in recent reports ⁽¹⁾ and is said to rise to more than 300 million by 2025. ⁽²⁾ The International Diabetes Federation (IDF) also reported that the total number of diabetic subjects in India is 41 million in 2006 and that this would rise to 70 million by the year 2025. ⁽³⁾

This places a tremendous burden on the health care system of developing countries like India. Though the current medications available for management of diabetes are able to control the blood sugar levels satisfactorily, they are associated with side effects like hypoglycemia and resistance. Hence there is a continued search for newer group of hypoglycemic agents to deal with this pandemic.

PATHOPHYSIOLOGY:

Diabetes Mellitus is a chronic metabolic disorder characterised by a high blood glucose concentration-hyperglycemia (fasting plasma glucose > 7.0 mmol/L, or plasma glucose > 11.1 mmol/L 2hr after a meal) - caused by insulin deficiency, often combined with insulin resistance. ⁽⁴⁾

Hyperglycemia occurs because of uncontrolled hepatic glucose output and reduced uptake of glucose by skeletal muscle with reduced glycogen synthesis. When the renal threshold for glucose reabsorption is exceeded, glucose spills over into the urine-glycosuria and causes an osmotic diuresis (polyuria), which in turn, results in dehydration and increased thirst (polydipsia).

It is mainly of two types:

Type 1 diabetes encompasses cases resulting from pancreatic B cell destruction (immune-mediated in most cases).

Type 2 diabetes consists of combined defects of insulin secretion and action ranging from predominantly insulin resistance with relative insulin deficiency to a predominantly secretory defect with insulin resistance.

Management of Diabetes Mellitus:

Drug therapy for type 2 diabetes aims to control blood sugar levels both in the basal (fasting) and postprandial state; rational combinations of agents with different mechanisms of action can be used. Both fasting and postprandial blood glucose levels need to be monitored and controlled, as do components of the metabolic syndrome such as insulin resistance, dyslipidemia, hypertension, and a procoagulant state.

The agents used currently for management of DM ⁽⁵⁾

Recently novel categories of antihyperglycemic therapies have emerged for management of DM.

1. GLP-1 (Glucagon like peptide) Mimetic:

It is based on modulation of the incretin system. Incretins are gut-derived peptides secreted in response to meals, specifically the presence and absorption of nutrients in the intestinal lumen. ⁽⁶⁾ The major incretins are **glucagon-like peptide-1 (GLP-1)** and **glucose-dependent insulinotropic peptide (GIP)**. GLP-1 is produced by the neuroendocrine L cells of the ileum and colon; GIP is elaborated by K cells of the duodenum and jejunum. Both are released rapidly after meal intake; their secretion appears to be under neural control. GLP-1 and GIP stimulate insulin output from pancreatic cells in a glucose-dependent fashion (enhancement of secretion linked to the presence of hyperglycemia). In addition, GLP-1, but not GIP, decreases pancreatic α -cell secretion of glucagon, a hormone that augments hepatic glucose production. GLP-1 also retards gastric emptying and likely has a direct suppressive effect on central appetite centres. The cardinal physiological role of the incretin system appears to be the attenuation of postprandial glucose excursions. ⁽⁷⁾

Notably, patients with type 2 diabetes mellitus (T2DM) are partially deficient in GLP-1 secretion, ⁽⁸⁾ a finding that has encouraged the development of drugs that augment GLP-1 levels or activity. Recently, however, the question of whether such incretin dysregulation is responsible for or is a consequence of the hyperglycemia in diabetes has been raised. ⁽⁹⁾

The first incretin modulator class encompasses the GLP-1 analogues or mimetics, which are functional agonists of the GLP-1 receptor. The initial approved member of this class is the injectable **exenatide**. Incretins are rapidly degraded by the enzyme dipeptidyl peptidase-4 (DPP-4), which is widely expressed in many tissues, including kidney, liver, lung, and the small intestine ⁽¹⁰⁾. As a result, the half-lives of GLP-1 and GIP are measured in minutes. Oral inhibitors of DPP-4, in essence, increase the plasma concentrations of the biologically active form of endogenously secreted incretins.

Exenatide shares partial homology with human GLP-1 and activates human GLP-1 receptors. It is administered as a subcutaneous injection typically twice daily in doses of 5 to 10g. Pivotal trials have assessed its efficacy at lowering glucose in patients with Type II Diabetes Mellitus in combination with metformin and/or sulfonylureas ⁽¹¹⁾. In investigations, Exenatide resulted in a haemoglobin A1c (HbA1c) reduction of 1.0% compared with placebo treatment, with the predominant effect on lowering postprandial glucose with less prominent reduction in fasting glucose. Weight loss has also been demonstrated, probably because of the effects of exenatide on gastric emptying and appetite. ⁽¹²⁾ In in vitro and animal models, GLP-

1 and its analogues are associated with proliferative effects on pancreatic cells.⁽¹³⁾ Progressive islet dysfunction is a recognized phenomenon in Diabetes Mellitus Type II and results in the eventual loss of glycemic control over time. In addition to functional abnormalities, an actual decrease in β cell mass also has been demonstrated⁽¹⁴⁾, likely the result of increased apoptosis combined with decreased regeneration. Therefore, any agent that alters this balance may delay or prevent the decline in insulin secretory capacity, potentially allowing a more durable effect on glucose control than conventional agents, most of which are associated with substantial therapeutic attrition over time. This hypothetical effect of the GLP-1 mimetics, however, has not yet been demonstrated in long-term clinical trials. Side effects of exenatide include nausea and vomiting, particularly at the initiation of therapy. Recently, post marketing reports of pancreatitis occurring in exenatide-treated patients have emerged, with most patients having at least 1 risk factor for this condition. A causal association with exenatide is not clear. Because of its glucose-dependent effect, exenatide does not increase the risk of hypoglycaemia. Exenatide is approved solely for use in combination with metformin, a sulfonylurea,⁽¹⁵⁾ a thiazolidinedione,⁽¹⁶⁾ the combination of metformin and a sulfonylurea, or the combination of metformin with a thiazolidinedione. Among patients with T2DM requiring insulin therapy, exenatide exhibits less potent HbA1c reduction compared with its combination with oral agents,⁽¹⁷⁾ an expected observation because such individuals tend to be more insulin deficient with less available insulin secretory reserve. Exenatide is also effective as monotherapy, but this is not an immediately attractive option for most patients, given its method of administration.

Liraglutide:

Liraglutide is a once-daily GLP-1 analogue, and exenatide LAR, a long-acting depot formulation administered once weekly. Effects on the cardiovascular system with GLP-1 mimetics have centered around their potential role in heart failure (HF).

2. DIPEPTIDYL-PEPTIDASE-IV (DPP-4) INHIBITORS :

Oral inhibitors of DPP-4 have recently become available for patients with Type 2 Diabetes Mellitus. They decrease the activity of the enzyme DPP, thereby enhancing meal related circulating concentrations of biologically active GLP-1 and GIP. In contrast to therapy with GLP-1 mimetic, DPP-4 inhibitors increase effective incretin levels into a more physiological range.⁽¹⁸⁾ E.g. **Sitagliptin, Vildagliptin.**

Sitagliptin: sitagliptin inhibits GI mediated dipeptidyl-peptidase-4 (DPP-4) which is responsible for inactivation and degradation of incretin hormones. The increased action of incretin stimulates insulin release & reduces glucagon secretion, resulting in lower A1C and lower fasting & postprandial glucose levels. This action enhances the body's response to food while minimizing hypoglycaemia. Sitagliptin is dosed at 100mg daily. It may be taken with or without food {Availability: Canada: 100mg tablets only; USA: 25mg, 50mg and 100mg strengths}⁽¹⁹⁾

Mechanism of Action:-

These drugs prolong the activity of proteins that increase the release of insulin after blood sugar rises, such as after a meal. Sitagliptin is a selective inhibitor of the enzyme dipeptidyl peptidase-4 (DPP-4), which metabolizes the naturally occurring incretin hormones glucagon-like peptide-1(GLP-1) and glucose-dependent insulinotropic polypeptide (GIP) resulting in enhanced glucose-dependent insulin secretion from the pancreas and decreased hepatic glucose production. Since GLP-1 enhances insulin secretion in the presence of raised blood glucose levels, inhibiting DPP-IV activity will increase and prolong the action of GLP-

1 by reducing its rate of inactivation in plasma. Sitagliptin reduces HbA1c, fasting and postprandial glucose by glucose-dependent stimulation of insulin secretion and inhibition of glucagon secretion. ⁽¹⁹⁾ GLP-1 has other widespread effects including delaying gastric emptying, significantly reducing glucagon levels and possible central effects on appetite.

Pharmacodynamic and Pharmacokinetics:-

Studies of sitagliptin have shown that the administration of sitagliptin results in inhibition of DPP-4 activity for a 24 hour period. Bioavailability of sitagliptin is approximately 87%. Half life is between 8-14 hours. It is 38% bound to plasma proteins. It undergoes limited metabolism via CYP3A4 and CYP2C8. Elimination is mainly through urine. ⁽²⁰⁾

Indications, Dosing and Administration:-

Sitagliptin is approved for use as monotherapy in addition to diet and exercise or in combination with metformin or PPAR- α agonists if monotherapy is not sufficient.

The recommended dose for monotherapy or combination therapy is 100 mg by mouth daily taken with or without food. Because of its renal elimination, dose adjustments of sitagliptin are necessary in patients with renal dysfunction.

A combination product of sitagliptin and metformin was approved by the FDA in April 2007. This product is marketed as JanumetTM and is available in the following strengths: 500 mg metformin/50 mg sitagliptin and 1000 mg metformin/50 mg sitagliptin. Janumet is approved for use as an adjunct to diet and exercise in patients with type 2 diabetes and in those not adequately controlled on metformin or sitagliptin alone. It should be administered orally twice daily with meals. ⁽²¹⁾

Adverse Effects ⁽²²⁾

- Upper respiratory tract infection (4.5-6.3%)
- Nasopharyngitis (5.2-6.3%)
- Urinary tract infection (3.2%)
- Headache (1.1-5.9%)
- Arthralgias (3%)
- Other side effects may include sore throat, cough, fatigue, dizziness, edema, nausea, and diarrhoea

Contraindications:

It is a pregnancy category B drug. Because there are no adequate, well-controlled studies of sitagliptin in pregnant women, it should be used during pregnancy only if clearly needed. Caution should be exercised with use of sitagliptin in nursing women. Sitagliptin can pass into breast milk and may harm a nursing baby. In children, safety and efficacy are not established. Dosage adjustments are needed in patients with moderate or severe renal function impairment. In moderate renal function impairment dose should be reduced to 50 mg once daily. In severe renal function impairment dose should be reduced to 25 mg once daily. Sitagliptin is also contraindicated in diabetic ketoacidosis. **Hypersensitivity reactions** such as anaphylaxis, angioedema, & exfoliative skin conditions (Stevens - Johnson syndrome) as well as deranged liver function tests have been reported rarely. ⁽²³⁾

Drug interaction:-

Sitagliptin plasma concentrations may be increased modestly (approximately 68%), with cyclosporine which is not expected to be clinically important. Digoxin plasma levels

may be increased slightly (approximately 18%), however, no dosage adjustment is recommended. Although sitagliptin is not as likely to cause hypoglycaemia as some other oral diabetes medications, one has to be careful while prescribing any other drug that can potentially lower blood sugar, such as: probenecid, nonsteroidal anti-inflammatory drugs (NSAIDs), aspirin or other salicylates, sulfa drugs, a monoamine oxidase inhibitor (MAOI) or beta-blockers. ⁽²⁴⁾

Vildagliptin ⁽²⁵⁾

A member of the class that enhances islet cell insulin secretion via an augmented incretin effect, is a high affinity dipeptidyl-peptidase-4 (DPP-4) inhibitor that improves glycaemic control. The administration of vildagliptin results in rapid and near-complete inhibition of DPP-4 activity. Vildagliptin shows weak inhibition of, and rapid dissociation from DPP-8 and DPP- 9, compared to DPP-4. In patients with type 2 diabetes, administration of vildagliptin led to inhibition of DPP-4 enzyme activity for a 24-hour period. Vildagliptin inhibition of DPP-4 results in increased fasting and postprandial endogenous levels of the incretin hormones GLP-1 (glucagon-like peptide 1) and GIP (glucose-dependent insulinotropic polypeptide). The degree of improvement in beta-cell function is dependent on the initial degree of impairment; in non-diabetic (euglycemia) individuals, vildagliptin does not stimulate insulin secretion or reduce glucose levels. By increasing endogenous GLP-1 levels, vildagliptin enhances the sensitivity of alpha cells to glucose, resulting in reduced glucagon secretion. There is a reduction in inappropriate glucagon release during meals. The increase in the insulin/glucagon ratio with hyperglycaemia, due to increased incretin hormone levels, may thus be expected to decrease postprandial hepatic glucose production, leading to reduced glycaemia. The known effect of increased GLP-1 levels to delay gastric emptying is not observed with vildagliptin treatment.

Contraindications:

- Hypersensitivity to vildagliptin or to any of the excipients.
- Chronic kidney disease.
- Hepatic impairment.

Adverse reactions:

- **Nervous system disorders**
Common - Dizziness
Uncommon - Headache
- **Gastrointestinal disorders**
Uncommon - Constipation
- **General disorders and administration site conditions**
Uncommon - Peripheral Oedema

3. Sodium-glucose transport protein (SGLT: 2) inhibitors:

Canagliflozin, Dapagliflozin, Remogliflozin, Sergliflozin.

Inhibit subtype 2 of the sodium-glucose transport proteins (SGLT2), which is responsible for at least 90% of the glucose reabsorption in the kidney. Blocking this transporter causes blood glucose to be eliminated through the urine. Effect on glycaemia independent of insulin secretion or sensitivity. Effect dependent on plasma glucose concentration and glomerular filtration rate.

4. Amylin Mimetics:

New antihyperglycemic agent, used predominantly by patients with type 1 diabetes mellitus (T1DM) on intensive insulin regimens. Human Amylin, a β cell peptide is co-secreted with insulin.⁽²⁶⁾ Deficient Amylin secretion is a well-recognized phenomenon in T1DM and in later-stage in T2DM patients, in whom pancreatic insulin production is markedly reduced. Amylin suppresses glucagon secretion from pancreatic α cells, thereby attenuating hepatic glucose production. It also delays gastric emptying and likely possesses a central effect to enhance satiety. The net effect on HbA1c is modest (0.4% to 0.6%) compared with placebo; body weight typically decreases by 1 to 2 kg.⁽²⁷⁾ Because of the effects on satiety and gastric emptying, hypoglycaemia may occur in patients also receiving insulin. Accordingly, the prandial insulin dose should be pre-emptively reduced when these drugs are initiated.

Pramlintide:

Pramlintide is an analogue of amylin, a small peptide hormone that is released into the bloodstream by the β -cells of the pancreas along with insulin, after a meal.⁽²⁸⁾ Like insulin, amylin is deficient in individuals with diabetes. By augmenting endogenous amylin, Pramlintide aids in the absorption of glucose by slowing gastric emptying, promoting satiety via hypothalamic receptors (different receptors than for GLP-1), and inhibiting inappropriate secretion of glucagon, a catabolic hormone that opposes the effects of insulin and amylin.

Side effects of Pramlintide:

Redness, swelling, bruising, or itching at the site Pramlintide injection, loss of appetite, pain in abdomen, indigestion, GI upset, excessive tiredness, dizziness, cough, sore throat, joint pain.

5. Dual PPAR α and PPAR γ agonist

Given the favourable cardio protective effect of PPAR α and PPAR γ ligands, the dual PPAR receptor agonists have been currently developed and they are glitazar class of drugs such as Areglitazar, Muraglitazar, Ragaglitazar, Naveglitazar.⁽²⁹⁾ By activating both PPAR α and PPAR γ receptors they simultaneously reduce atherogenic triglycerides, raises cardio protective HDL levels, improve insulin sensitivity.⁽³⁰⁾ With extended use it is believed that these agents may reduce the risk of cardiovascular complications, but their long term clinical effects are still unknown. Clinical studies evaluating the efficacy of dual PPAR receptor agonist in reducing cardiovascular risk are currently underway.

6. Bromocriptine:

Dopamine is known to be the most abundant adrenergic neurotransmitter in the central nervous system. It stands to reason, therefore, that a dopamine modulator may be effective in modifying autonomic responses and ensuring euglycemia.⁽³¹⁾ One such drug is now available. In 2009, the US FDA approved timed release Bromocriptine for the therapy of type 2 diabetes mellitus. This is the first drug to be approved by the organization after it laid down stringent requirements for demonstration of cardiovascular safety of antidiabetic drugs.⁽³²⁾ Bromocriptine is prescribed once daily, early morning, in an initial dose of 0.8 mg/day. It should find a place in the management of diabetes, as monotherapy or combination therapy.⁽³²⁾ Clinical utility should be maximal in obese, depressed (anhedonic) patients with limited mobility and features of insulin resistance. This drug has not been used extensively in Indians, as it was not available commercially earlier. It is possible that the diabetes epidemic is fuelled

by adrenergic dysfunction related to stress and changes in lifestyle. If so, bromocriptine, through its dopamine modulating action, will prove to be an effective drug in the fight against diabetes. For a highly charged, dopaminergic (adrenergic) society like India, bromocriptine has the potential to revolutionize management of diabetes.

DISCUSSION:

Diabetes mellitus places a tremendous burden on the health care system of developing countries like India. As described earlier, variety of drugs with diverse mechanism of actions are available in the market to combat the morbidity associated with diabetes mellitus. Though these agents effectively controls blood glucose levels in majority of cases, yet they fail to achieve the desired goals. Hence despite of availability of these agents there is need for additional drugs which can overcome their limitations. As described above many novel classes anti-diabetic drugs which are highly potent, safe and efficacious over existing drugs. Drugs such as Exenatide and Liraglutide which belong to Glucagon like peptide1 mimetic acts by stimulating the insulin secretion, ultimately lowering the plasma glucose concentration. Compared to the existing drugs such as Sulphonylurea, these drugs are less likely to produce hypoglycaemia and hence are promising agents for use in combination with metformin, a sulphonylurea, a thiazolidinedione, the combination of metformin and a sulphonylurea, or the combination of metformin with a thiazolidinedione.

Sitagliptin, Vildagliptin which are DPP-4 inhibitors, increase effective incretin levels into a more physiological range thus minimising the risk of hypoglycaemia as seen with existing anti-diabetic drugs. The combination of Sitagliptin and Metformin is approved for use by the US FDA.

Dual PPAR γ agonist simultaneously reduce atherogenic triglycerides, raises cardio protective HDL levels, improve insulin sensitivity showing favourable cardio-protective effects. Hence these agents hold promise as far as potency, safety and efficacy is concerned in management of diabetes.

SUMMARY:

The strategy of therapy for patients with type 2 diabetes have changed in the last several years. In this era of diabetes, there is ever increasing competition between the choices of anti-diabetic agents. The goal of therapy is not only to achieve significant reduction in plasma glucose value but also to achieve an HbA1C level as close to normal as possible, without subjecting the patient to excessive risk of hypoglycaemia. The promising features of these new drugs are that they exert neutral or beneficial effects on the bodyweight. These drugs with their compelling characteristics are being used as an adjuvant to the current medicines as combination therapy, with promising results. As mentioned above drugs such as DPP 4 inhibitors and GLP 1 mimetic, also have additional benefits like producing euglycemia without subjecting the patients to the risk of hypoglycaemia, thus preventing the development of cardiovascular complications. The exact goal should be tailored to the individual patient, based on his or her clinical characteristics. The higher cost of these agents alongwith absence of long-term safety and clinical outcome data, should be taken into consideration by diabetologists and healthcare practitioners. Further studies should, however, be carried out for the risk benefit and cost benefit analysis of these newer drugs. Accordingly, these newer medicines should be prescribed in increasing frequency.

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Case report

WHAT'S IN THE RIGHT ATRIUM?

Dr. MB Chandurkar, Dr. I Kanzaria

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Case report

WHAT'S IN THE RIGHT ATRIUM?

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Abnormal masses (tumours, thrombi, vegetations) must be distinguished from the normal cardiac structures that may mimic a mass. The echocardiographic evaluation of intracardiac masses is dependent on the ability to distinguish between normal and abnormal findings¹. Erroneous diagnosis may lead to inappropriate medical therapy and surgery².

CASE REPORT:

A twenty two years young female was referred to our hospital as a case of pregnancy with heart disease. The presenting complaint of patient was dyspnea and palpitations on exertion since last one year.

On examination, the patient was having mild pallor, no signs of congestive cardiac failure. Cardiovascular examination revealed a loud first heart sound, and a low pitched middiastolic rumbling murmur in mitral area, with presystolic accentuation. Pulmonary component of 2nd heart sound was accentuated. ECG was suggestive of LA enlargement, and X-ray chest Suggestive of straightening of left heart border.

A clinical diagnosis of Rheumatic mitral stenosis was made, and confirmed on echocardiography. The mitral valve area was 1.7 cm² by pressure half time & pulmonary artery systolic pressure by TR jet was 40 mm of Hg.

Apart from these findings, the apical 4c view and subcostal 4c view on TTE showed a highly mobile serpentine structure in RA fig (I), moving in whip line motion away from the tricuspid valve.



[\(Click HERE for the video clip\)](#)

Based on the clinical profile of patient and TTE appearance, a diagnosis of chiari network was made.

DISCUSSION:

Chiari first described this fetal remnant in right atrium in 1897 in an autopsy series by Dr. Chiari.

In early cardiac development, two venous valves guard the right horn of the sinus venosus³. The smaller right valve is incorporated into septum secundum, and right valve partitions the right atrium.

In normal development, the right valve regresses between gestational weeks 9 & 15, its cephalic portion remaining as crista terminalis, and caudal portion dividing to form the eustachian and thebesian valves. Failure of regression gives rise to Chiari network, which attaches to the superior vena cava and crista terminalis⁴.

The Chiari network is documented to be present in only 1.5% to 3% of adults⁴. It is of rare clinical importance, but can be the site of thrombosis⁵, and can cause entrapment of right heart catheters. Another embryonic remnant in right atrium is persistent sinus venosus valve. It can be confused with valve disruption, vegetation or other mass lesion (myxoma), particularly when associated with suggestive clinical condition. The characteristic feature should allow differentiation.

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Case Report

SORDID SORCERY: A CASE REPORT WITH REVIEW OF PHENOMENON

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Case Report

SORDID SORCERY: A CASE REPORT WITH REVIEW OF PHENOMENON

Dr. Rajesh Bardale

ABSTRACT:

In past, black magic was widely prevalent in India. These black magicians are popularly called as *mantrik* and used to cure all sort of ailments by means of curses, physical abuse, charms or giving potions. A violent death due to sorcery is being reported. An eleven-year female child was brought for autopsy at Indira Gandhi Govt. Medical College, Nagpur with history of being treated by *mantrik*. In contrast to voodoo death or *kahuna*, where no physical injury or poisoning was suspected in causation of death, in the present case, actual physical abuse was the conspicuous feature.

KEY WORDS: sorcery, black magic, death, autopsy, forensic

INTRODUCTION:

In past, the so-called black magicians and their magical remedies, virtually panacea for all ailments, were prevalent and widely practiced in India. However, in contemporary period where these things appear to our generation as a part of history, still from the corners of the country such occasional incidents are being reported. Albeit, all cases are not fatal but they are of great concern. One such act where a female child had lost her life, which was victim of the black magic, is being reported here with review of the phenomenon.

CASE REPORT:

An 11-year female child was brought for forensic autopsy at Indira Gandhi Medical College, Nagpur. As per available history narrated by parents, the child was suffering from fever, cough and pain in abdomen since 10 days. She was taken to the Municipal Corporation hospital where she was admitted. On second post-admission day, the parents take away the child from the hospital against medical advice to the *mantrik* (black magician) at 'Kaushaliya nagar' where the *mantrik baba* resides. At *mantrik's* hut, she was kept up to three days without clothes and food with garlands and flowers amidst the incense sticks and showering of water. It was learnt that the *mantrik* chanted *mantras*; throws water over the face then inflict burn with hot "*chimta*" (metal fork) and then nab at hairs of the victim and hit her head over ground. The procedure was repeated for several times. Meanwhile the poor child succumbs to death. The *mantrik* said that an evil spirit had affected her and he had freed her from that and she was in transition state where she was detached from the universe for some period and would wake up with cure of her ailment. The unfortunate parents waited with the body of their daughter in hut till neighbours informed to police that decomposition like smell perceived from hut.

At autopsy she was wearing red thread at neck with '*tabeez*' (small metal case) with black thread at waist. She was showing early signs of decomposition. She was having a contused-abraded area of size 5 cm X 5 cm at forehead with 15 superficial burn areas over face, chin, submental and submandibular region, over neck, at angle of mouth, over anterior chest and at both hand over dorsal aspect. Internal examination revealed under-scalp hematoma corresponding with surface injury. There was subarachnoid hemorrhage at both parietal and occipital lobes with contusion hemorrhages at occipital region. Lungs showed

evidence of pneumonitis. The intestine contains adult worm of *Ascaris lumbricoides* and other organs were congested.

DISCUSSION:

The sorcery is practiced in many part of world. Voodoo has been reported among Negroes in Africa & Haiti and among the aborigines of Australia, New Zealand, the natives of South America and the islands of Pacific (1). Amongst the Hawaiians, there existed a group – the '*kahunas*' or 'those who were keepers of the secret' (2). In India, these people are called as '*mantrik*' who practiced '*jadoo-tona*' (black magic). In past, it was believed that disease resulted from the malevolent spirits or disease producing demons. Whenever person felt ill, it was advised to consult the *mantrik* who would alleviate the malady. Healing was accomplished by means of curses, torture, charms and potions. The ceremony of casting out the possessing spirits might last for two whole days (3). Fasting, debilitation, continuous dancing, creation of tremendous and prolonged emotional excitement, use of drumming and rhythmic beating may all play a part in such method.

Cannon had given many accounts of voodoo deaths (1). Voodoo death, as defined by Cannon is sudden, unexplained death resulting from a voodoo curse. The victim develop illness with suddenness following only threat or pointing a bone and had not exhibited any apparent injury, exposure to toxins or infections (4). Analogous to voodoo death, *kahuna* victims die due to terror. A device frequently used to inform the victims that the sorcerer had singled him out. Due to threat and terror, the victim would refuse food and drink, would pine away; his strength would wane and in few days he would die. Saphir cited a different story of voodoo worshiper who had shown the signs of poisoning after consumption of a "voodoo drink" (possibly carbon tetrachloride) prepared and given by voodoo priestess in an attempt to cure his disease (5).

Contrary to Cannon, Janower and Saphir, in the present case, the unfortunate victim was subjected to physical abuse. In cases of voodoo deaths, Cannon had proposed a physiological basis for the phenomenon and thought that death might be due to shocking emotional stress or repressed terror whereas physical injury with violent banging is the conspicuous feature in the present case. Moreover, in India, beating with broom or *lath*, slapping over cheek, tossing the head over ground, giving burns with metal fork are some additional measures tried over the affected person. It is thought that by doing such act, they were harassing the devil and the devil would escape out from the body. Surprisingly, the close ones watched the scene but no one tried to intervene due to fear that intervention in the procedure would affect the evil spirit to them. Going with the Cannon, it is true that the component of fear is one of the most deeply rooted and dominant of the emotions. So with such a lethal weapon of fear in his hand, the *mantrik* goes on repeating the act, at times costing the life. It is unfortunate that still people are taking shelter of such *mantrik* and accepting death but not seeking medical aid. In future, one could hope that with increase in education in community and public awareness such incidents will not occur.

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Case report

EXPERIENCE OF FRONTALIS SLING PROCEDURE

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Case report

EXPERIENCE OF FRONTALIS SLING PROCEDURE

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ABSTRACT:

Blepharoptosis i.e. drooping of the upper eyelid ranges from mild to severe. In its severe form the upper lid covers the pupillary area thus obstructing the visual axis. In such cases demonstrating poor LPS function and good Frontalis excursion, upper lid frontalis sling surgery is the procedure of choice. In this procedure organic or inorganic material is used to connect upper lid to the frontalis muscle with the aim of lid elevation.

Here is a case series of 15 cases with severe ptosis managed by us by frontalis sling procedure using autogenous fascia lata. The surgical procedure, results and complications are hence discussed.

KEY WORDS: Blepharoptosis, frontalis sling, autogenous fascia lata

INTRODUCTION:

Drooping of the upper lid is called as blepharoptosis. Etiologically blepharoptosis can be congenital or acquired. It may be neurogenic, myogenic, aponeurotic or mechanical.

The goals in the evaluation of ptosis are threefold. First an attempt should be made to determine the etiology of the ptosis. Secondly the extent of medical work up necessary should be considered. Thirdly a decision should be made regarding suitable surgical procedure. None of these can be achieved without determining the amount of ptosis.

A ptosis of less than 2 mm is considered mild, 3 mm moderate and 4 mm or more as severe.⁽¹⁾ The evaluation of LPS function is the single most parameter helpful in the diagnosis and management of ptosis. LPS function may be separated into excellent (12 mm or more), moderate (5 to 11 mm) and poor (0 to 5 mm), Frontalis muscle suspension is the gold standard for the treatment of congenital severe ptosis with poor levator function.⁽²⁾ A number of sling materials namely autologous fascia lata, preserved fascia lata, non absorbable suture material, mersilene mesh etc have been tried.⁽³⁾ Autogenous fascia lata is commonly used as the material of choice for the frontalis sling in brow suspension ptosis surgery in patients over 3 years of age. It is preferred by many surgeons for its predictable and lasting results. Autogenous material avoids the problems associated with both donor human tissue and synthetic materials such as granuloma formation, infection, extrusion, and late failure⁽³⁾⁽⁴⁾⁽⁵⁾.

In this article we present our experience of frontalis sling using autogenous fascia lata. Surgical technique, post-operative results and complications are described.

MATERIAL AND METHODS:

We described 15 cases of severe ptosis with LPS function less than 2mm, operated by us over last 10 years by fascia lata sling procedure. Out of 15 patients, 13 were of simple congenital unilateral ptosis, one of congenital complicated bilateral ptosis and another of acquired late onset spontaneous unilateral ptosis.

In all cases detail history regarding age of onset, stability versus progression and variability, synkinetic movements, family history and history of previously trauma or episodes of lid oedema was taken.

Detail local examination was done in all cases, which includes recording of vision, development of amblyopia, fundus examination, Bells phenomena, diplopia on raising the lid, superior rectus weakness and corneal sensations.

Levator function was measured in all cases, All cases were subjected to frontalis sling using fascia lata.

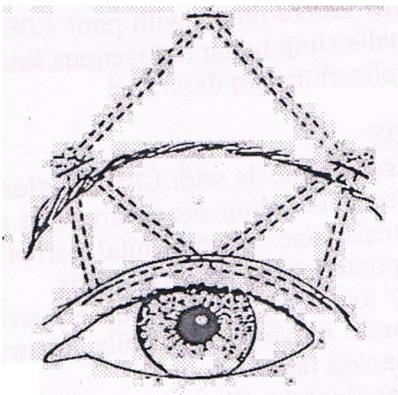
PROCEDURE:

A. Obtaining autogenous fascia lata.

Fascia lata is obtained directly through an incision in the lower outer aspect of the thigh as follows. After surgical preparation of the area a vertical 3 inch skin incision is made in the lower lateral aspect of the thigh, starting 5 to 6 inches above the knee and carried downwards. The incision is continued through the thick layer of subcutaneous fat upto shining fascia lata, Bleeding is controlled, The upper and lower wound ends are undermined by dissection with long bladed scissors, which enable a surgeon to take an extra half or three quarters of fascia at each end. The lips of wound are retracted by the assistant and two vertical incisions 3 to 4 mm apart are made in the exposed fascia the full length of the wound. This gives a strip of fascia about 10 cm long and 3 to 4 mm wide sufficient for one lid. If both lids are to operate at once, fascia strip is cut 7 to 8 mm by 10 cm. The strip is cut off at both the ends and is wrapped in warm gauze. Wound is closed in layers. Alternatively a fascia stripper may be used which simplifies the procedure and reduces the size of skin incision. Two longitudinal fascia lata strips are cut into 2 X 10 cm each fascia lata sling procedure:

B. Fascia lata sling procedure:

1. Lid guard insertion: Two 3-0 black silk sutures are inserted through the upper lid margin at the junction of central with the medial and lateral third, The lid guard is placed in upper fornix and fixed to towel.
2. Crawford's operation: The lid is marked off into thirds, and three 4mm horizontal incisions are made in the lid skin 2mm above the margin the first is in the center of the lid, the other two are 10 mm on each side. Two incisions are now made 7mm above the brow about 7mm medial and lateral respectively to the corresponding lid incisions, A third central incision is made 6 mm higher and parallel with other brow incisions on the forehead.



Wright's fascia lata needle is passed behind the orbicularis muscle. One strip is threaded through the medial brow incision to medial lid incision, across to central lid incision and back to medial brow incision. Another strip is passed in like manner through the lateral incision.

The two strings of fascia are pulled up to give the desired lid lift and configuration. The fascia is then tied securely and the knot reinforced with a locking suture of 5-0 catgut.

The long ends of each of the fascia strips are brought through the forehead incision are the position of the lid is adjusted until the margin is 1mm below the upper limbus two strips are then clamped together and 5-0 catgut suture is used 5 mm below the clamp to tie

them firmly together. The bite of the suture is taken through deep fascia over frontalis muscle. Skin incisions are closed with 4-0 silk, frost suture is placed in lower lid and taped to brow to protect the eye.

POST -OPERATIVE CARE :

After surgery, first dressing is done after 24 hour, frost suture is removed.. Skin suture is removed on 7th day. Antibiotic eye drops & Methylcellulose 5% eye drops are advised. Regular patient follow up was done every 6 monthly for 18 to 24 months with mean follow up of 20 months. Patients were observed for any complications like undercorrection, overcorrection, exposure keratitis and overall patient satisfaction was noted.

OBSERVATION:

Table 1: Type of ptosis (15 cases)

| Sr. No. | Type of ptosis | No. of case |
|---------|---|-------------|
| 1. | Congenital simple unilateral ptosis | 13 |
| 2. | Congenital complicated bilateral ptosis | 01 |
| 3. | Acquired late onset spontaneous ptosis | 01 |
| | Total | 15 |

Table 2: Sex distribution (15 cases)

| Sr. No. | Sex | No. of case |
|---------|--------------|-------------|
| 1. | Male | 7 |
| 2. | Female | 8 |
| | Total | 15 |

Table 3: Age distribution

| Sr. No. | Type of ptosis | No of Patients | Age |
|---------|---|----------------|-----------|
| 1. | Congenital simple unilateral ptosis | 13 | 10-20 yrs |
| 2. | Congenital complicated bilateral ptosis | 1 | 10 yrs. |
| 3. | Acquired late onset spontaneous ptosis | 1 | 50 yrs. |

Table 4: Complications

| Sr No | Complication | No of Patients | Percentage (%) |
|-------|--------------------|----------------|----------------|
| 1. | Under correction | 1 | 6.66% |
| 2. | Over correction | 0 | 0 |
| 3. | Notching | 0 | 0 |
| 4. | Lagophthalmos | 0 | 0 |
| 5. | Recurrence | 0 | 0 |
| 6. | Ectropion | 0 | 0 |
| 7. | Exposure keratitis | 0 | 0 |
| 8. | Chronic edema | 0 | 0 |
| 9. | Infection | 0 | 0 |

RESULTS AND DISCUSSION:

Sling surgery with autogenous fascia lata is still considered the gold standard procedure for congenital ptosis, having a long-lasting effect for upper eyelid elevation.^(3, 9, 10) When a piece of free autogenous fascia is transplanted to the eyelid, it can easily survive.⁽¹¹⁾ Two percent comparative studies have shown that using a fascia lata sling is more effective than other materials, except for Gore-Tex®.^(3, 10) Another recent study has shown that the functional success rate with a fascia lata sling was high (94%) at 18 months⁽¹²⁾. In our study results of Frontalis sling surgery using autogenous fascia lata in respect to good lid elevation, good lid fold, minimal or no lid swelling were good and achieved in all patients, showing 93.3% success rate with overall excellent patient satisfaction. However acceptable lid lag was found in all cases. In addition, the fascia lata sling has a low rate of complications such as infections, extrusion, breakage and granuloma formation.⁽³⁾ No such complications were observed in our study.

The main disadvantages of a surgical repair using autogenous fascia lata is the need for a second surgical site to harvest the fascia with the possible risks to the donor site⁽⁷⁾, as well as the fact that fascia lata may cause cicatricial contracture of the upper eyelid, which cannot be easily repaired⁽¹³⁾.

There are certain contraindications to Frontalis sling. It should not be done in cases with strabismus fixus, in absence of Bell's phenomena, if there is diplopia on raising the upper lid and if there is weak orbicularis action with poor lid closure.

SUMMARY AND CONCLUSIONS:

Frontalis sling procedure using autogenous fascia lata is done in severe ptosis with LPS action less than 2 mm, with good Bells phenomena, good corneal sensations. It is a simple procedure, which can be done any time after the age of 3 years when the thigh becomes long enough to permit sufficient fascia lata to be obtained. The advantages of procedure are good lid elevation, good lid fold, good eye closure, no delayed post-operative infection and excellent patient satisfaction.

However it leads to some unavoidable complications like lid lag on down gaze and lagophthalmos in sleep in acceptable range.

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PHOTOGRAPHS:

Photo:1- Bilateral Congenital Ptosis

Pre Operative

Postoperative



Photo: 2 - Severe bilateral Ptosis

Pre operative

Postoperative



Photo: 3- Congenital LE ptosis Pre operative & post operative & Site of fascia lata graft



Case report

A CASE OF OLEANDER POISONING

Dr.C Atkar, Dr. MB.Chandurkar, Dr. A Dube, Dr. AK Ghosh

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Case report

A CASE OF OLEANDER POISONING

Dr.C Atkar, Dr. MB.Chandurkar, Dr. A Dube, Dr. AK Ghosh

ABSTRACT:

The oleander plant is widely cultivated in India and all over the world. The poisonous effect of oleander has been well known for the centuries. All parts of the plant are very poisonous. Oleander contains several cardiac glycosides. The characteristic poisoning symptoms are nausea, vomiting, cardiac arrhythmia and neuromuscular manifestations. Here we present a case of woman who presented to us with Oleander poisoning.

CASE REPORT:

Forty year's old female was brought to the emergency department of our hospital with history of consumption of juices of roots of Oleander approximately one hour prior following some domestic quarrel..

Her presenting symptoms were nausea, vomiting, altered sensorium and convulsion, which were generalised tonic clonic a total of three episodes before admission.

On examination pulse was 84/min., regular, blood pressure was-126/70 mm of Hg, respiratory rate of-22/min, and cardiovascular system examination was normal. On respiratory system examination she had bilateral coarse crepitations on auscultation secondary to aspiration, Abdomen was soft.

On central nervous system examination she was deeply comatose with Glasgow coma scale of 3, pupils were semidilated sluggishly reacting to light, and deep tendon & planter reflex were absent.

Her investigations including routine haemogram, renal and liver function tests Electro Cardio Gram (ECG) and urine was normal. Serum Sodium was - 139 mEq/L, Serum. Potassium-4.4 mEq/L. Arterial blood gas analysis done on admission was normal. She was treated with gastric lavage, mechanical ventilation, continuous cardiac monitoring, broad spectrum antibiotics, anticonvulsants and Intravenous fluids. Patient responded well to treatment had an uneventful recovery and was discharge from the hospital on seventh day after psychiatric counselling.

DISCUSSION:

The oleander plant is widely cultivated in India. There are two varieties namely Nerium Odorum (white oleander) and Cerbera thevetia (yellow oleander).

Each and every part of the plant is poisonous especially the seeds.¹ Ingestion of oleander seeds or leaves is a common cause of accidental poisoning worldwide particularly among children^{2,3}. The oleander have been use for suicide , homicide , abortion and as herbal medicine in India , Thailand , Brazil and elsewhere^{1,4,5} . In Sri Lanka attempted suicide case were rare before 1980 but increased suddenly in 1983⁶ . Currently several thousand cases occur each year approximately 10% died mostly young woman and children who have eaten seeds⁷. The mortality is much higher in developing country as compare to developed world⁸.

Symptoms of oleander poisoning :

Nausea, vomiting, abdominal pain, diarrhoea, headache, dizziness, muscle twitching and tetanic spasm, contact dermatitis.

Fatal dose -

15 to 20 Gms of root or 8 to 10 seeds.

Treatment of oleander poisoning.

Gastric lavage, activated charcoal and fragment antigen binding antibody (**FAB**) along with other supporting treatment.

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Case Report

SPINAL ANESTHESIA IN A PATIENT WITH KYPHOSCOLIOSIS

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Case Report

SPINAL ANESTHESIA IN A PATIENT WITH KYPHOSCOLIOSIS

Dr. AG Kulkarni, Dr. AS Tarkase, Dr. SA Chaudhari

ABSTRACT:

Spinal anesthesia produces rapid, profound sensory analgesia using small volumes of drug without systemic pharmacologic effect. Spinal anesthesia is probably the most widely used regional technique for caesarean section. This procedure is usually withheld in cases of spinal deformities due to technical reasons. We report such a case with severe thoracolumbar kyphoscoliosis who was successfully given spinal anesthesia for caesarean section.

KEY WORDS: Caesarean section, spinal anesthesia, thoraco-lumbar kyphoscoliosis,

INTRODUCTION:

Vertebral column deformities pose a challenging problem to anaesthesiologists. Kyphoscoliosis is a deformity of costovertebral skeletal structure characterised by an anterior flexion (kyphosis) and lateral curvature (scoliosis) of patient's vertebral column which is associated with rotation of vertebrae and deformity of rib cage. Seventy percent of cases are idiopathic. Its prevalence in the general population varies from 0.3% to 15.3% with a female preponderance of 3:1.

While applying anaesthesia, kyphosis and/or scoliosis can lead to difficulty in both during endotracheal intubation and also performing regional intervention.

The present case illustrates how regional anaesthesia can be equally beneficial in patients with kyphoscoliosis though general anaesthesia is the anaesthesia of choice.

CASE REPORT:

A 32 yr. old female was posted for emergency caesarean section, with indication of previous L.S.C.S. with cephalopelvic disproportion.

Her past history was insignificant except that she had undergone caesarean section three years back under general anaesthesia. The patient was nil by mouth for six hours. On examination, she was short statured (4ft and 11inches). While examining her spine it was found that she had significant kyphoscoliosis in thoracolumbar region

(Fig. 1).



The bulging at the back was severe enough to unable her to lie comfortably on her back. This deformity was since childhood. She did not have any difficulty in breathing. Her vitals were stable and her systemic examination was normal except for slight dimunition of breath sounds bilaterally at the bases. Her mouth opening was adequate and Mallampatti grade was II.

After thorough examination, her basic investigations like hemoglobin percentage and blood group was checked as it was an emergency caesarean section. After obtaining the consent, she was shifted to the operation theatre and an I.V. line secured with 20 G I.V.cannula and a lactated Ringer's infusion was started. All the monitors like pulse oximeter, NIBP were attached. Her SPO2 on air was 90% which improved to 96% on oxygenation with ventimask.

She was planned for spinal anaesthesia. Pt. was premedicated with inj. Ranitidine 50mg. & inj. Metoclopramide 10mg. I.V. The patient was preloaded with 500ml of crystalloid. Spinal anaesthesia was given in left lateral position under all aseptic precautions with 23 G spinal needle with lateral approach. . Dural puncture was successful at the third attempt in L3-L4 interspace. After ensuring free flow and aspiration of cerebrospinal fluid, 1.8ml of 0.5%bupivacaine (hyperbaric) was injected into the subarachnoid space. The patient was then laid supine.

The sensory level of blockade was up to T₈ level 1min after making the patient supine. Immediately the ascent of spinal anaesthetic drug was guarded by a pillow under her shoulders & head up inclination of the table. The pt. was then handed over to surgeons.

Intraoperatively the patient had hypotension (syst. B.P<20% of baseline) twice which was treated with vasopressors, while she had one episode of bradycardia (P.R< 60) which was treated with inj. atropine 0.6mg i.v. Maximum level of spinal blockade was T4 & the SPO2 was maintained at 97% with ventimask. Another 750 ml of crystalloid was given in the perioperative period.

The procedure was completed in one hr. and the patient was shifted to the ward after observing for one hr. in the recovery room.

DISCUSSION:

Kyphoscoliosis is one of the common causes for chronic extrinsic restrictive lung disease. It is a deformity of costovertebral skeletal structure characterised by an anterior flexion (kyphosis) and lateral curvature (scoliosis) of patient's vertebral column [1]

Fig 2

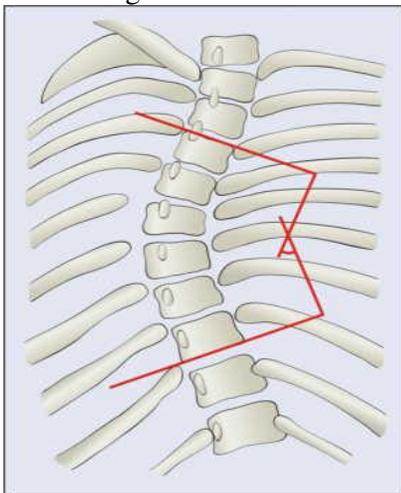


Fig 3



A deformity of the vertebral column is considered as a contraindication for spinal anesthesia because of technical reasons. The level of derangement in cardiac and pulmonary functions of kyphoscoliotic patient is related to the amount of Cobb's angle in thoracolumbar X-ray (fig. 2,3). If this angle is $>40^{\circ}$ the cardiorespiratory function frequently decreases & if $> 100^{\circ}$ significantly decreases.^{[2],[3]}

Even if the lungs are healthy, the distortion of thoracic cage makes the respiratory system much less compliant and increases the work of breathing. In severe cases, displacement with rotation of trachea and main stem bronchi may also be noted which may cause problems during intubation for general anaesthesia^[6].

For an emergency caesarean section in a patient with severe restrictive lung disease, the feasibility and choice of anaesthesia for delivery is important. The physiological changes in pregnancy can worsen the respiratory function in a scoliosis patient with restrictive lung disorder. Also increased mucosal vascularity of respiratory tract and edema of airway during pregnancy may lead to difficulty in endotracheal intubation and increased chances of bleeding during endotracheal intubation.

General anaesthesia is indicated in scoliosis in maternal preference, when there is maternal cardiopulmonary disease and when there is difficulty in performing regional block. Severe scoliosis is associated with altered anatomy of the airway causing difficulty in laryngoscopy and intubation. It is also associated with pulmonary hypertension and patients have a risk of increase in pulmonary artery pressures during laryngoscopy and difficult intubation. Also, scoliosis patients with severe restrictive lung disease could present problems during extubation, may require postoperative ventilation, with difficulty in weaning off the ventilator.

This patient had no features suggestive of cor pulmonale. Though general anaesthesia is recommended in such patients it has its own disadvantages as mentioned earlier.

Spinal anaesthesia was successfully tried in this patient and was uneventful both intra and postoperatively.

Use of less volume of drug and guarding the ascent of spinal anaesthetic drug at levels below the level of surgical analgesia desired are the key precautions which were taken in this patient.

CONCLUSION AND RECOMMENDATIONS:

Though spinal anaesthesia is not the anaesthesia of choice in patients with kyphoscoliosis, it can be successfully used in such patients if due care is taken. Hence it is recommended that pregnant patients with kyphoscoliosis posted for emergency caesarean section, spinal anaesthesia can be a good option, as against general anaesthesia which has its own disadvantages to mother as well as fetus. general anaesthesia.

Similar studies were also done by Gupta S, Singariya G^[4] and Bansal N, Gupta S^[5], and found that spinal anaesthesia can be successfully given in patients with kyphoscoliosis.

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Case report

MISDIAGNOSED MALIGNANT MELANOMA OF CHOROID IN BLIND EYES

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Case report:

MISDIAGNOSED MALIGNANT MELANOMA OF CHOROID IN BLIND EYES

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ABSTRACT :

Choroidal malignant melanoma, although commonest primary intraocular tumor, is rare in India and even rarer in the Asian population. It usually occurs in elderly patients, but in Asians it has been found in young and middle-aged people. Choroidal melanoma is so infrequent and masquerading that it is easily misdiagnosed as either primary retinal detachment or orbital cellulitis, retinoblastoma, central serous choroiretinopathy or glaucoma. It is many times missed in blind eyes with opaque medias. Here we present three such unsuspected cases which were diagnosed by histopathology only after enucleation surgery. Two of them were males and one female. All between 40 to 50 years of age. The cases are discussed because of the rarity of the condition.

KEY WORDS: Choroidal malignant melanoma, misdiagnosed, enucleation in blind eye.

INTRODUCTION :

Uveal malignant melanoma is the only fatal ocular disease in adults. This condition is rare in our country, so we often overlook its possibility in most of our patients and more so in blind eyes with obscure medias.

Makley and Teed found 21% of their eyes had opaque medias and more than half of these cases, the tumour was clinically unsuspected. The series of Kirk and Peety also support this conclusion. 90% of these clinically unsuspected eyes are enucleated for glaucoma and others long standing blind phthisical eyes with recent history of pain and or pain and proptosis.

The incidence of uveal malignant melanoma in Western countries is 6 in 1 million where as in our country it is 0.002% to 0.006%. It is commonly seen in whites and rarely it is bilateral.

CLINICAL SUMMARY:

We describe three cases of clinically unsuspected malignant melanomas seen by us over past two years. All three were between 40 to 50 years. Two of them were males and one female. All the three were blind eyes with recent history of pain and inflammation. Other eye was normal in all cases.

Two of these cases were treated as glaucoma (one medically and other by surgery) elsewhere. The third patient presented with recurrent proptosis with pain for 1 year, responding initially to steroids. In all these patients fundus could not be visualized as the medias were hazy due to glaucomatous corneal changes in two cases and chronic iridocyclitis with complicated cataract in the third case.

As the eyes were blind and painful enucleation was done in first case at our institute and other two elsewhere. Third case presented to us with orbital growth, 1 month after enucleation.

On gross examination the growth was limited to eye ball in first case, it was extending into the orbit through sclera necrosis in second case and there was diffuse orbital infiltration in the third case.

On histopathological examination two had mixed cellular pattern with melanin pigmentation according to Callender's classification, while third case showed highly anaplastic cells which melanin pigmentation.

DISCUSSION :

Two studies ⁽⁶⁻⁸⁾ conducted earlier in Sankara Netralaya, Chennai, have shown clinicopathological profile of patients with choroidal melanoma between 1987 and 2001. It usually occurs in elderly patients ⁽⁹⁾ but in Asians it has been found in young and middle-aged people. An earlier study by Biswas *et al* ⁽⁸⁾ has compared the age of presentation and male: female ratio among Chinese, Caucasians, Afro-Americans, Japanese, Hispanics, and Asian Indians and concluded that Asians present with choroidal melanoma at a younger age than Caucasians and Americans. The Chennai study ⁽¹⁰⁾ shows the mean age of presentation was 45.94 ± 14.85 years and nearly 38 (33.6%) patients were below 40 years of age, of which 6 were less than 20 years. This is in contrast to the collaborative ocular melanoma study where mean age of eligible patients was 60 years ⁽⁸⁾

Choroidal melanoma is so infrequent and masquerading that it is easily misdiagnosed. In Sankara Netralaya, study, 36 (31.8%) patients were misdiagnosed. The most common misdiagnosis was retinal detachment (26 patients, 23%) in Sankara Netralaya study ⁽¹⁰⁾ One patient was treated as a case of recurrent retinal detachment and underwent vitreous surgery before diagnosis and enucleation. Earlier studies have reported only a few cases of misdiagnosis ⁽⁵⁾ Other misdiagnoses included retinoblastoma, central serous chorioretinopathy, and glaucoma.

In our study the 3 cases detected after enucleation out of which two were initially treated as glaucoma (one medically and the other by filtration surgery) elsewhere and diagnosis of Malignant melanoma of choroid was made by histopathology only after enucleation.

The third case which was presented with pain and proptosis in the right eye was initially thought to be benign because of its response to steroids. This clearly indicates in inflammatory process of recent origin in long standing blind eye should be taken seriously as the spread of tumour (orbital or distant) corresponds with the onset of symptoms of inflammation. So, such eyes which are though functionally hopeless should be subjected to the investigations of intraocular tumour i.e. Indirect ophthalmoscopy, ocular ultrasonography (B scan) and orbital computerized tomography. We failed to do this because we did not suspect the condition in first case while our second patient could not afford this test.

CONCLUSION :

The diagnosis of intraocular malignant melanoma is often missed because of the rarity of the condition in India. Malignant Melanoma of the choroid though rare seems not to be uncommon in long standing blind eyes with obscure media which present with inflammatory condition of recent onset.

Malignant melanoma of the choroid should be suspected in cases presenting with :

1. Unilateral glaucoma, uncontrolled medically/ surgically other eye being normal.
2. Long standing blind eyes due to phthisis bulbi and or staphyloma with recent history of pain and proptosis.
3. Panophthalmitis with Proptosis.
4. Exudative retinal detachment in young age group.

Enucleated, even seemingly benign innocuous eyes must be subjected to histopathology in all cases and the condition should always be kept at the back of your mind before performing the enucleation.

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