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Editorial

Revive Autopsy

Autopsy is a highly specialised surgical procedure that consists of a thorough examination of corpus to determine the cause and manner of death and to evaluate any disease or injury that may be present. It also describes the extent of disease and the effect of medical or surgical treatment. The term "autopsy" is derived from ancient Greek word autopsy meaning "to see for oneself" (autos: onself ; opsis: eye).[1,2] The synonyms used are post-mortem examination, necropsy (usually for non- human bodies), autopsia cadaverum and obduction.[1]

Evidences indicate that autopsy existed in 3000- 3500 BC by ancient Egyptians, Greeks and Romans. Ancient Babylon autopsied on animals. By 150 BC ancient Roman legal practice had established clear practice for autopsies. In 44 BC Julius Caeser was subjected for official autopsy to know the cause of death. Galen (131-200 AD) dissected animals and humans. Giovanni Morgagni (1682- 1772), father of anatomical pathology, was considered as the first great autopsiest and correlated autopsy findings with clinical symptoms. Autopsy in medical education peaked during 1800. Karl Rokitansky (1804- 1878) supervised 70,000 autopsies, personally performed 30,000, averaging two a day for seven days a week for 45 years. [1] Rudolph Virchow (1821-1902) applied autopsy finding to study disease and was considered the first molecular biologist. Sir William Osler performed many autopsies and also left detailed instructions for his own autopsy. In 1910, Abraham Flexner revealed astonishing discrepancies in clinical diagnosis and autopsy findings.[2,3]

Autopsy has to be conducted only after consent from next of kin, who also has the right to limit the scope of the autopsy. However in medico-legal autopsy of unknown death referred by police or court autopsy can be conducted without the consent of next of kin. At autopsy samples are taken for culture of infectious agent, tissue which is frozen for future diagnostic/ research purpose, tissue fixed in 10% formalin for light microscopy examination/ archiving for training of medical students, samples are taken for toxicological / chemical analysis and genetic testing. Detailed external and internal examination has to be done and later body has to be reconstituted. [2]

Depending on the purpose of autopsy, autopsy can be classified as legal (medico legal, coroners, forensic autopsy), pathological (clinical autopsy) and anatomical (academic autopsy). Medico legal autopsy is carried out when the cause of death may be a criminal matter and the decision is taken by coroner/prosecutor/ medical examiner. Death can be natural, accident, homicide, suicide or undetermined. Clinical autopsy is done to find out the medical cause of death for unknown/ uncertain death or for teaching/ research purpose so that patient death can be prevented in future. The anatomical autopsy is done by the students of anatomy for study purpose only.[2] Alternative technique to a conventional full autopsy are limited autopsy and virtual (medical, imaging, non-invasive autopsy). Limited autopsy is done when full autopsy is not feasible as in areas of infectious hazard, relatives not

agreed for full autopsy, focus on organ/ body cavity of clinical curiosity. However it is not a substitute to conventional autopsy. The methods of limited autopsy are endoscopic technique, laparoscopic autopsy (higher consent rate and very high sensitivity in fatal traumatic lesions) and needle autopsy (no gross information, done under lawful circumstances, fresh tissue obtained). Virtual autopsy is done by MRI or CT scan in cases of personal, religious or cultural objection to autopsy. MRI is most promising, however is not gold standard. The disadvantage of virtual autopsy is, it cannot take samples from the body, cannot identify very small but significant lesions and no histological confirmation can be done. [1]

The **benefits** of autopsy is multifaceted-

1) **The psychological benefit for family members**: Autopsy reveals exact cause of death, health status before death, diagnosis and treatment / standard or quality of care given and uncovers the genetic disease and communicable infectious disease. The information helps in grieving process and enables the family to participate in medical education and research.[1,2]

2) **Benefits for clinicians and hospital**: Autopsy confirms the accuracy of clinical diagnosis and medical care, know the exact cause of death especially in sudden or unnatural deaths and other factors contributing to patient death. Lessons will be learnt when autopsy reveals medical errors which has resulted in death. Autopsy also assesses the effectiveness and side effects of gene therapy. Many times autopsy highlight clinicopathological discrepancies which is approximately 25% in various studies which helps in future clinical practice, clinical auditing and as a quality assurance tool. [1.2.4]

3) **Benefit to society**: autopsy helps to evaluate new diagnostic tests, investigation of environmental and occupational disease, new therapeutic interventions, gives valid mortality statistics and new medical knowledge on existing disease and emerging new diseases so that death can be prevented in future. It helps in averting major errors and class I errors by preventive health means.[1,2]

4) **Research**: Autopsy helps to know varieties of emerging diseases. By utilizing emerging technologies like molecular DNA and genetic analysis which can be done in inherited genetic disease and hence possible prophylactic measures can be followed.[1,2]

5) **Education or teaching**: For medical students and allied health professional. Hence decrease in autopsy rate leads to adverse consequences in future clinical practice. It also helps to know the changes in transplanted organ and light microscopy feature which is potent and long lasting. [1,2]

The **disadvantages** of autopsies are, some diseases are difficult to detect, eg: cardiac arrhythmias, student's psychological reactions which distract from potential educational benefit and delay in family members receiving report. [1]

Autopsy was at peak in 19th century started declining in 20th century.[1] In western countries autopsies are decreasing since 1955 which is negatively affecting health care. In United States the autopsy rate declined from 17% in 1980 to 14% in 1986 to 11.5% in 1989. The autopsy rate has dropped from 50% to less than 10% over past fifty years. [2] In Australia, there is a decline in hospital autopsy rate

from 21% in 1992- 93 to 12% in 2002-03. However Perinatal autopsy increased from 29% to 58%.[3] In UK after 1950 the autopsy rate decreased even in teaching hospital to 10% of deaths or less. [1] Many religions like Judaism and Islam usually discourage performing autopsy on their adherents. Beginning in 1950s hospital autopsy started falling from average of 50% of all deaths to 10% in 1990s. It is still lower in non-academic hospitals. At this rate of decline, clinical autopsy and pathologist who perform may face extinction. The next generation of doctors may not experience the powerful education benefit of examining the body after death and its importance in modern medicine. Measures to reduce mortality from common fatal disease by scientific validation will be hindered. The future practice of medicine will be blind and lead to many adverse consequences of clinical actions or omissions. [1] In 1970s the joint commission for accreditation of hospital dropped the requirement that hospital autopsy rate should be 20% to be accredited. [2]

There are many **factors for decline** of autopsy. Some of the family factors are changing in basic doctor- patient relationship, vanishing concept of "family doctors" because of specialisation and sub-speciality, hence difficulty to obtain consent for autopsy, an issue of trust. In addition concern over disfigurement, delay in funeral arrangement, some institution or hospitals charge for autopsy and unauthorised organ retention especially brain and heart.[1,2,3] Clinical factors for the decline of autopsy are, most clinicians are uncomfortable about the autopsy as it questions physician care, assumption that modern imaging studies, diagnostic and laboratory tests has increased the accuracy of clinical diagnosis and hence no extra information from autopsy, uncovering errors or missed diagnosis which may help to improve future patient care but sometimes at the price of a law suit. There is decrease in the rate of request for autopsy by clinicians (6.2% cases) and limited attendance at autopsy by clinicians. [2,3] The pathologist's factors are autopsy-pathology is a vanishing subspecialty and has taken secondary position compared to laboratory medicine and surgical pathology. For many pathologists, it is not a favourable activity, is an extra burden with no compensation, getting insufficient priority and lack of respect for autopsy pathologist. The quality of autopsy report has decreased and in some does not guarantee the cause of death. In addition, autopsy facilities are not maintained, funding is not provided, work force shortages, hence pathologist contribution to autopsy is declining with little involvement in death audit meetings. In addition the adverse public perception, community resistance and adverse media of retention of organs particularly brain and heart has lead to less number of family attenders giving consent to autopsy. The recent change in medical undergraduate curriculum have resulted in students not seen the autopsy and future doctors have less knowledge of the rate of autopsy in verifying the cause of death. [1,2,3]

Autopsy remains as "Gold Standard" in evaluating quality of medical care. Survey has shown that less than 1% of hospital patients who die are autopsied. Government agencies that regulate the accreditation to hospitals are deeply concerned about the decline in autopsy rate. Hence reversing this

decline needs co-operation at several levels of health care system. Hence to revive autopsy, there should be effective organisation of all aspects of the autopsy service, support from administration, community awareness, emphasising to family members the quality benefit of unexpected findings, skilled pathologist with improved lab facilities, better and timely communication between pathologist and clinicians with clinico-pathological correlation, use of autopsy data in institutional risk management and research projects in autopsy.

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Dr. Kalyani. R. MD (Path), FICP.
Executive editor, JCBS,
Professor of Pathology,
Sri Devaraj Urs Medical College,
Sri Devaraj Urs Academy of Higher Education and Research,
Kolar. Karnataka.
Mobile: 9448402775.
E-mail: drkalyanir@rediffmail.com.