

Principles of autopsy

03RD November 2010

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objectives

- Define autopsy
- Definitions- sudden unexpected and unexplained
- Describe the statutory requirements for investigation of sudden unexpected deaths and the broad types of autopsies
- Outline the common natural and unnatural causes of SUD
- Understand cause, mechanism and manner of death using the case scenarios given
- Outline the steps carried out in autopsy of SIDS as a special autopsy

Definitions

- Postmortem
dissection
view and grant
- Autopsy/necropsy

Types of autopsies

- Clinical- consent and clinical summary
- Medicolegal/forensic-A23/NO CONSENT
- Requirements-

Statutory requirements and definition SUD

- These are medicolegal or Forensic autopsies, under the criminal procedure act
- Sudden unexpected death may be natural or unnatural
- WHO def: death within 24 hours from the onset of symptoms.
- Others def as death within one to 12 hours of onset of symptoms. Sudden death has a circadian rhythm occurring between 7-9am (**Dada et al**)
- The commonest cause of **natural** unexpected deaths are cardiovascular and CNS related
- **Unnatural** causes may occur suddenly leaving no trace. Example cyanide poisoning, arsenic,

SIX scenarios

- Was not attended in the last illness by a doctor
- Had not been seen by a doctor either after death or within 14 days prior to death
- COD unknown even where was being attended
- Death due to poison or industrial accident
- Unnatural, violent (trauma involved), abortion, neglect
- During surgery or before recovery from anaesthesia

Common Natural Causes of SUD in adults

- CAD- atherosclerosis, embolism, spasm, congenital anomalies-e.g young athletes
- Heart- HHD, MI, Myocarditis, cardiomyopathy, etc
- Great vessels- aneurysms,
- Respiratory- PTE, haemoptysis, bronchial asthma, foreign body, spontaneous pneumothorax
- CNS- CVA, epilepsy, thromboembolism, etc

Natural COD

- GIT-haemorrhage, thrombo-embolism, alcoholic liver disease, acute pancreatitis,
- Endocrine- thyroid-hypo/hyper
- adrenal- Fredreichsen Waterhouse syndrome , pheochromocytoma,
- Pancreas- DM
- Parathyroid- hypoparathyroidism
 - Hyper calcaemia

Unnatural modes(manner) of sudden unexpected death

- Homicide
- Infanticide
- Abortion related death
- Suicide
- Accidents- RTA/ Industrial/domestic
- Medical misadventure and anaesthetic related deaths

unknown

- 5-10% cases remain unascertained even after thorough autopsy and auxiliary tests

Sudden unexpected deaths in children

- Infections with complications- malaria, respiratory tract infections, GIT-e.g. hepatitis A, gastroenteritis
- SIDS

Sudden infant death syndrome- SIDS

- Synonyms COT Death, crib death
- 0.6/1000 Live births
- DEF. sudden death of an infant which is unexpected by history and by examination of the scene in whom a thorough autopsy fails to reveal an adequate COD
- It is a diagnosis of exclusion
- Age 2weeks to 2 years, **peak** 1-7months with a peak at 2-3 months
- Male preponderance

SIDS

- Higher in twins ?prems ?Low birth weight
- Higher incidence in colder and wetter months both in northern and southern hemisphere- ? Overdressing hence hyperthermia, sleep apnoe
- Increased in Low Socio-economic areas- poor housing, low occupation, one parent, etc
- Smoking mothers

Objectives of the PM in SUD

- Determine the cause of death
- Mechanism of death
- In SIDS to excludes treatable genetic defects- e.g enzymes the TCA cycle
- Obtain evidential material- photographs, toxicology, clothing, missiles-bullet fragments, etc
- Autopsy report
- Produce evidence in court where necessary- e.g at an inquest

Case 1 unexplained cause of death- medical misadventure

- 8 old male
- Presented at an outpatient clinic with history of fever and head aches for four days
- Had travelled to Nyanza two weeks prior
- o/e- pharyngitis
- Bs For mps negative-on 31st Aug
- Discharged on antibiotics
- Seen on 1st September with persistent symptoms
- Admitted
- Repeat BS for mps negative, antibiotics changed

Case 1 cont

- On 3rd bs for mps positive +4
- Developed jaundice
- Hep A IGg positive and IGM negative on 3rd september, Hep B /C -IGG and IGM negative
- Liver and kidney failure
- On 8th and 9th September hepatitis A IGG and IGM positive
- Died on 9th sept
- Post mortem- massive liver cell necrosis

Cause of death statements in scenario 1

- COD
- MECHANISM OF DEATH
- MANNER

Post mortem report – FORM A 23 or private report

- Summary
- identification
- External examination
- Recent injuries
- Remote injuries
- Internal examination- by systems
- Commentary or summary
- Histology and other tests

PM report

In SIDS all these test must be carried out to exclude

- Toxicology
- Bacteriology
- Virology
- Chromosomal assays
- X-rays total body
- others
- Conclusion

TECHNIQUES

- Rockitansky method
- Latulle
- Gohn method

Special TECHNIQUES

- Examination of foetus and placenta
- Pelvic examination
- Spinal cord injuries/diseases
- Vertebral artery injury
- Exhumation and disaster victim identification

homicide-



Signs of medical intervention



Signs of medical intervention



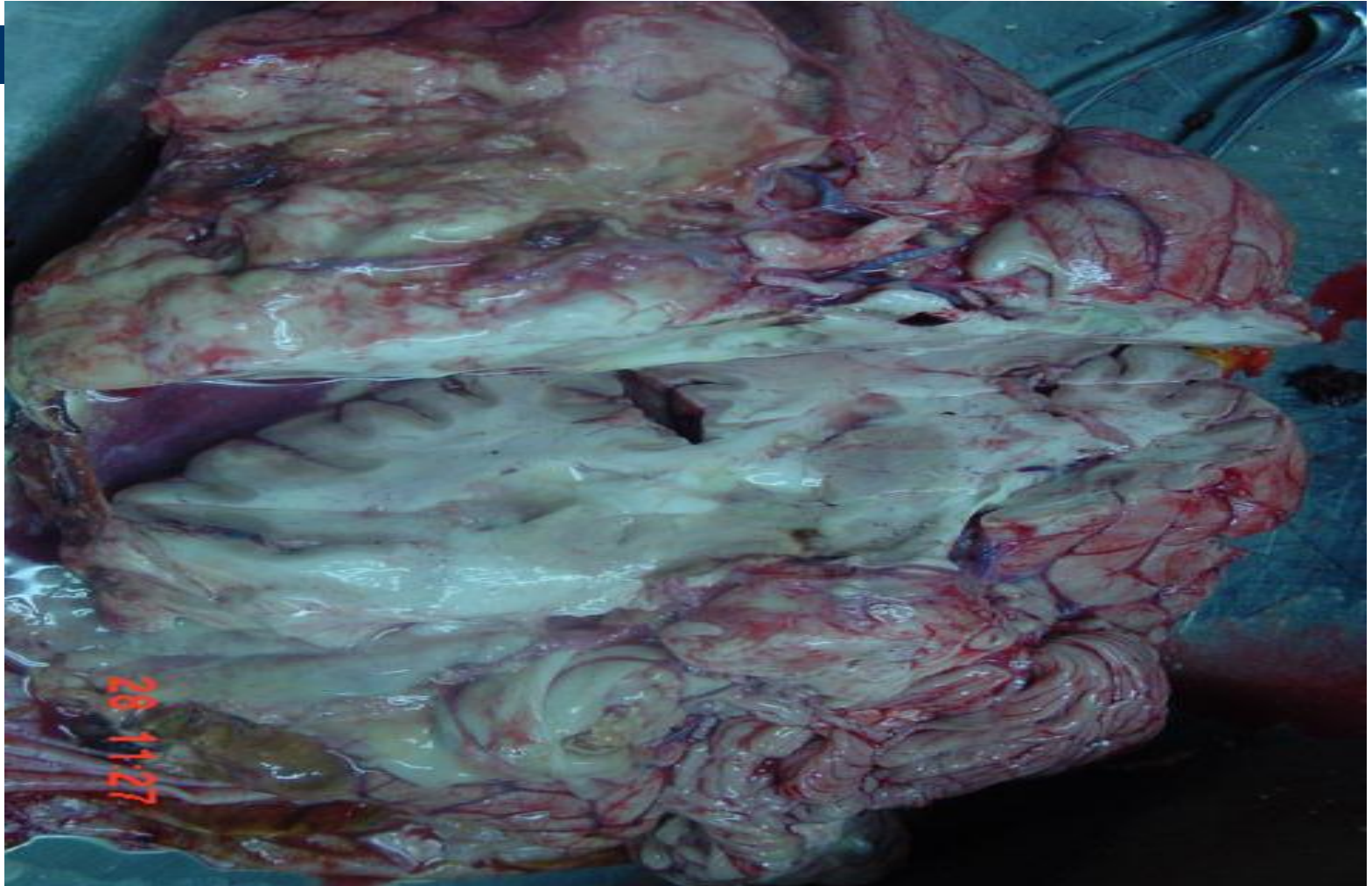
Entry wound



Wound track- fracture right middle cranium, maxillar, temporal bone



Wound track- contusion right temporal lobe with abscess



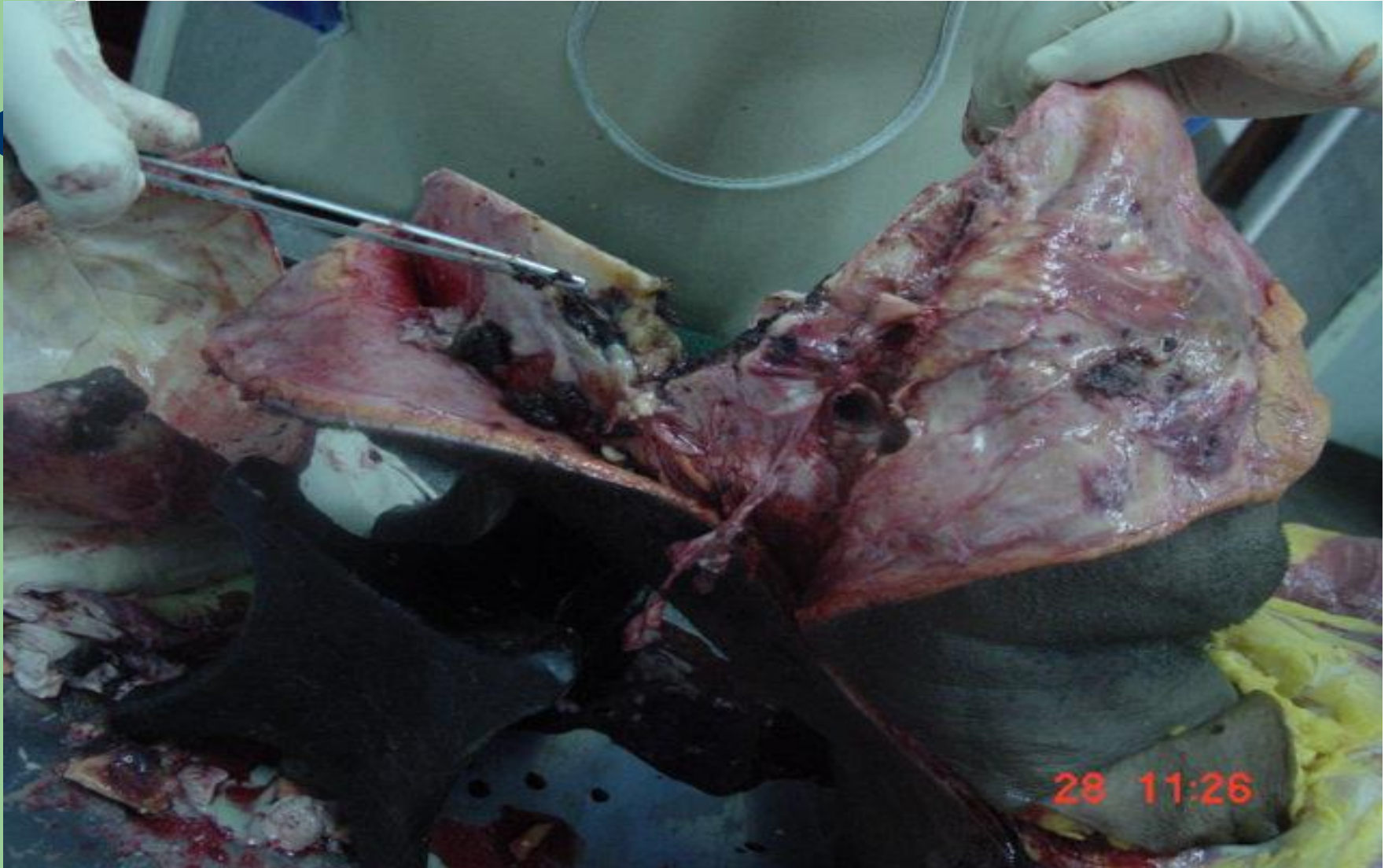
Exit wound



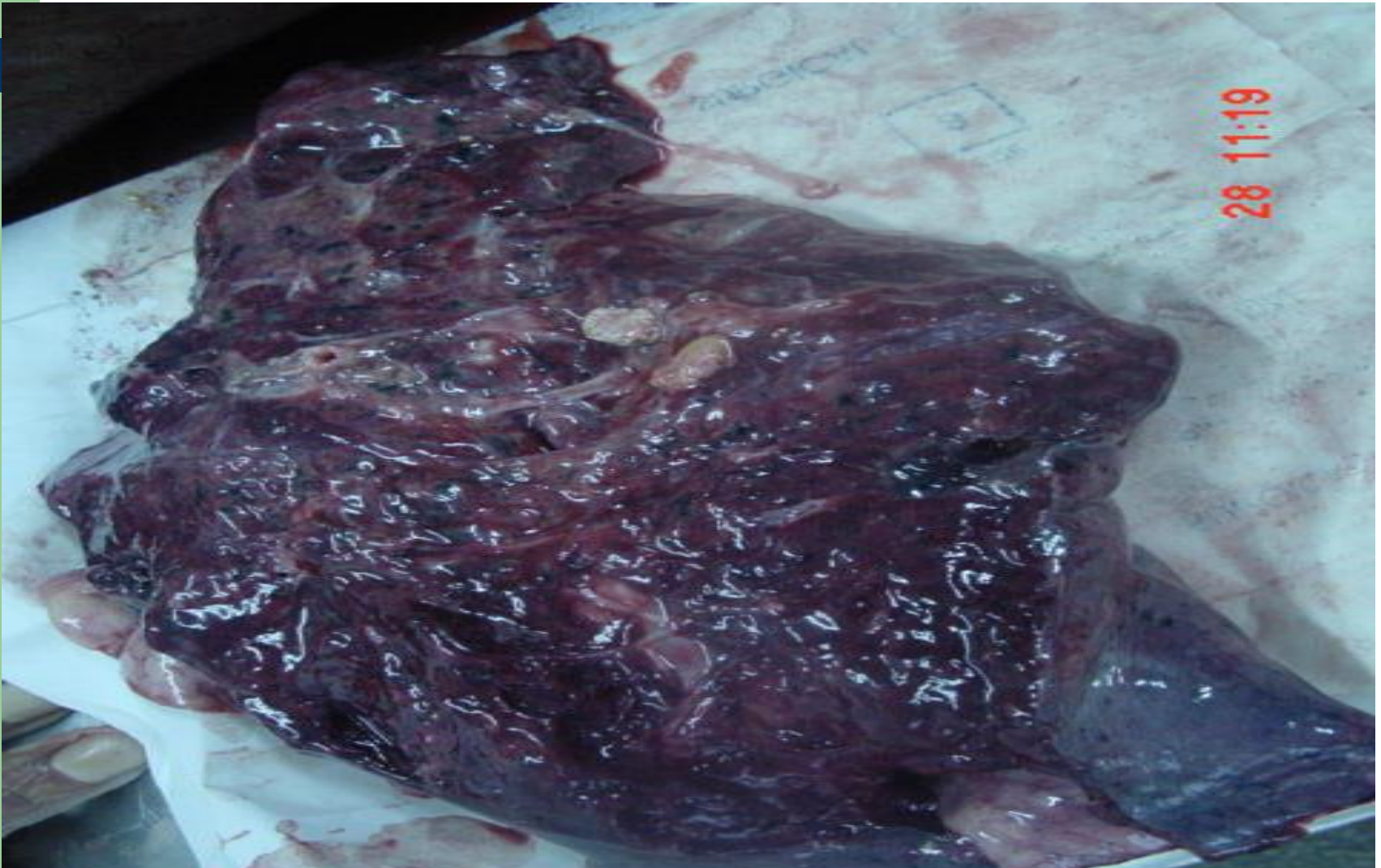
Exit wound- communitied fracture right temporal bone, with a bone defect, bruised scalp and muscle



Exitwound- external beveling of bone



**Findings in other systems-
bronchopneumonia, oedematous
heavy lungs, right apical cavity with
caseous mural node**





Spleen, kidney

250 g- soft

200 g- pale and poor corticomedullary demarcation

Relationship between trauma and disease

- Was the traumatic event solely responsible for the death?
- Was the death solely due to disease and would it have occurred irrespective of injury?
- Did the trauma contribute to the death to a lesser or greater extent

COD Statements in scenarion 2

- COD
- MECHANISM
- MANNER

COD

I a) single gun shot wound to head
complicated by brain abscess, diffuse
alveolar damage and bronchopneumonia

II-