   - D/D b/w AM hanging & PM Suspension
   - 2008 Hanging vs Strangulation
   - 2009 Examine scene of crime w/ Hanging
   - 2011 Ascertaining cause of death w/ Injuries + Hanging

   - PM findings w/ drowning w/ fresh nodes
   - 2008 Define drowning, PM findings of drowning
   - (2019) Drowning (PM)
Injury

2004 - Factual of MC report & Exam + Preparation of IR

2004 - Suicidal vs Homicidal injuries

2005 - Antemortem vs PM Injury

2006 - Determination of Range of firearm Injury

Features of Contact Wound by Rifle + Entry vs Exit wound by

Homicide vs Suicide

Entry vs Exit wound of shotgun

Autopsy Post wound 2009 - Cause of death from wound

Cloth of Injury, Injury by sharp weapon

Mechanism of Injury by Four Wheeler

Causes of Gravitational Fall, Use with example

Structure of Cartridge of Smooth bore pistol shotguns

Mechanism of Fire

2013 - Injury by Sharp weapon, correlation of weapon with Injury
Rape

Medical history: 15 yr old - 1 Rape

Trace evidence - different type of injury to victim of gang rape

How to proceed and opine in such case

Proceed of Rape

Lab. Inv. => material preservation for rape.
Chapter -10 SEXUAL OFFENCES

Rape

Definition (S. 375, IPC)

Under section 375 IPC, sexual intercourse by a man (of any age) is rape, if it is done with

- His wife who is < 15 years of age;
- Any other girl who is < 16 years of age, even with her consent (Statutory Rape);
- A man is said to commit rape if he has had sexual intercourse with a woman

1. Against her will
2. Without her consent
3. With her consent if she is < 16 years of age
- Intoxicated or has unsound mind so that she is unable to understand the consequences
- Consent is obtained by unlawful means i.e. fear of death or hurt to herself or to some one whom she is interested.
- Giving consent because she believes that he is another man to whom she is lawfully married.
4. Exception- sexual intercourse by a man with his own wife even against her will is not rape if she is > 15 years of age.

Terminology

- Rape can only be committed by a man & a woman cannot rape a man, although she may be guilty of indecent assault.
- Only in Australia, a husband can be convicted of rape upon his spouse only if, interalia, the offence consist of or is associated with an assault occasioning actual bodily harm or an act of gross indecency or threat to those ends.
- Statutory rape is establishing sexual relation with a person who is under age for providing consent for the acts.
- Custodial Rape is rape by persons who are in position of authority e.g. police officers, jail wardens, hospital staff and who abuse their position to commit the offence when the woman is under their custody / care.
- Gang Rape when a woman is raped by one or more in a group of persons acting in furtherance of their common intention, each is deemed to have committed gang rape.
- Date rape is sexual intercourse with a woman who is given a drink containing a sedative drug like catamine, GHB, rohypnol in a party (date) without her knowledge.

Law in relation to Rape

<table>
<thead>
<tr>
<th>IPC, section</th>
<th>States</th>
</tr>
</thead>
<tbody>
<tr>
<td>375</td>
<td>Define rape</td>
</tr>
<tr>
<td>376</td>
<td>- Lays down the punishment for offence of rape which may extend from 7 years to life imprisonment and also fine unless the victim is his own wife and is not under 12 years - it raped woman is his own wife (but not under 12 years) the imprisonment may extend to 2 year with or without fine - Who ever commits rape in custody/taking advantage of his official (public servant) position/ being on management or staff of hospital/on a pregnant women/woman &lt; 12 years or commits gangrape shall be punished with rigorous punishment of not less than 10</td>
</tr>
</tbody>
</table>

Examination in A Case of Rape

Ex. of Victim

Informed consent in writing should be obtained if she is over the age of consent (12 years). If she is underage or mentally subnormal, the written consent of parent or guardian is taken (section 30 CPC). Section 53 (2) CPC lays down that whenever a female is to be examined, the examination should be made only by, or under the supervision of a female RMP.

Ex. of Accused

An accused can be examined & necessary evidences eg blood, swab etc collected even with out his consent and by use of force (sec 53 (1) Cr PC 1973).

Presence of thick uniform coating of smegma under prepuce & corona glandis inconsistent with a recent intercourse

The presence of thick uniform coating of smegma under prepuce & corona glandis inconsistent with a recent intercourse (as it takes 24 hours to accumulate)

Sexual Intercourse (Rape) in Virgin

In virgin rupture (tears) of hymen due to sudden stretching occurs in posterior half of membrane usually at the sides (i.e. posteriority) in 4 or 8 O clock or 5 or 7 O clock position, or in the midline of hymen (6 O clock position)

- With first intercourse tears usually occur in posterior midline because the hymen lies suspended across a potential space here, whereas anteriorly periurethral tissues buttress the hymen.
- More than 2 tears are unusual. Semilunar hymen often ruptures on both sides. Annular hymen which nearly closes up the vaginal orifice may suffer several tears. Several hymenal lacerations indicate first sexual intercourse.

Our deep V shaped cleft / tear at 6 O clock or a number of clefts usually in posterior half hymen membrane indicate passage of any object through hymen orifice which is larger its original opening.

If the prepubertal children posterior tear may involve fourchette producing a deep U shaped defect. Fourchette is form, fossa navicularis vaginae and posterior commissure may be ruptured. The latter injury usually does not occur in consenting sexual intercourse unless there is much disproportion between the male & female parts.
Rape

Defy

How to proceed for examination

Procedure

Victim

- General procedure
  - Informed consent
    - 12 yrs
    - 72 yrs

- Name, history - Sexual - Torn frenal
- Examination without delay - Presence of sperm
  - In presence of female

Accused

- General procedure
  - Sec. 53(4) of CrPC
  - No need of consent

- History - Development
- General distress
- Influence of alcohol
Examination proper

- Tear
- Blood
- Clothed
- Seminal

- General Exam:
  - Injury on lips, wrist, buttocks, thigh, breast

- Hair

- Seminal stains
  - Swabs from:
    - Perineum
    - Stained areas of body
    - Low vaginal swab
    - High vaginal swab

- Prepare smear - see for living organism and allow today to prevent loss of sperm.

- Second swab is put in saline & examining for motility.
Third swab is air dried and placed in test tube for acid phosphatase.

- Blood stains
- Veneral disease
- Local examination
  - Virgin = labia injuries
    - Rovise scratching
      - Labia
      - Hymen
  - Posterior ray of membrane
  
8 -
Corrobative signs of rape = **Seminal**

- Presence of spermatozoa in vagina is proof of intercourse not of rape.

- Also, absence of spermatozoa is not proof of absence of intercourse.

- Presence of seminal stain on cloth genitalia provide strong evidence of attempted or committed intercourse.

- Through the DNA fingerprinting identity can be ascertained.

**Vaginal discharge**

- Transfer of disease is strong evidence of intercourse.

- Gonorrhea - mucopurulent discharge after 2-14 days

- Syphilis - Meer in 3 wks

Helee Initial negative swab is of value.
Resistance

Signs of active resistance

Findings related to time

1. Seminal fluid
   - Motile spermatozoa - 1 to 6 hours
   - Sperms may be recovered till 29th day

2. Genital area

3. Third age

   Specimen

1. Hair
   - 10 hairs from head
   - Matted hairs
   - Combed hairs from pubis
   - Hair fall on paper

2. Finger scraping

3. Any foreign matter
9. Blood 5 ml in plain for grouping and 5 ml EDTA for DNA profiling.

3. Blood 5 ml (NaF and Koxalate) for Alcohol and renal diseases.
   Blood samples to be refrigerated not frozen.

6. Urine for Alcohol & drugs

7. Swab for secretor grouping

8. Swabs from genitals and Stains
   All need to be neatly labelled and sealed.

From Accused:

1. Swabs from Coronal Suede
2. Blood
3. Pubic hair
4. Head hair
5. Matter hairs
In short evidence of rape:

- Marks of violence on victim & accused.
- Marks of violence around genitalia.
- Presence of semen, blood on clothes, body of victim & accused.
- Presence of semen in vagina.
- Existence of venereal abscess in both victim & accused.

To identify accused:
- Material from accused is compared with material (blood, semen, saliva, hair) of victim (located's principle of excreta).
Opinion

Medical proof of intercourse is not proof of rape. Rape is a legal definition and not medical diagnosis. Examiners should not make it so.

They the signs and evidences of the violence and intercourse need to be given.

Examination in a case of rape

A. Examination of victim

- Victim cannot be examined without written informed consent. Informed written consent should be obtained if the age of victim is above 12 years. If she is less than 12 years of age or if she is mentally unsound, the written consent of parent/guardian should be taken (Sec. 90 IPC). Victim (female) should be examined by or under supervision of a female RMP (Sec. 53(2) CrPC).
- Finding which are suggestive of rape are:
  i) Signs of struggle on clothes (tear, blood, semen, mud etc.), body and genitals (abrasion, contusion, bites or nail marks etc).
  ii) Presence of the semen in the vagina (proof of sexual intercourse).
  iii) Presence of spermatozoa in the vagina.
  iv) Locard's principle of exchange (PG 39, AI 01, AIIMS 91, Kerala 01, Kun 90) states that whenever two bodies come in contact with each other, there is exchange of material between the two (PG 39, AI 01) and so a criminal can be linked to crime (AI 01, AIIMS 91). In case of rape, piece of cloth, button, hair, blood, saliva, semen or smegma from the accused may be found on the body of victim and conversely materials of victim may be found on the body of accused.
- Presence of smegma bacilli in vagina is suggestive of coitus.

B. Examination of accused

- An accused can be examined even without his consent (Sec 53(A) CrPC). Findings may be:
  i) Presence of torn frenulum is consistent with a recent intercourse.
  ii) The presence of smegma under prepuce is inconsistent with recent intercourse as it gets rubbed off during sexual intercourse and may be deposited in vagina. It takes about 24 hours to accumulate. Thus, absence of smegma may indicate sexual intercourse, provided no bath is taken.
  iii) Presence of vaginal epithelial cells on penis can be detected by lugol's iodine
Poison Def. - A substance that is capable of causing illness or death of the human even when introduced or absorbed.

Corrosive poison

Fix electrolyte and exocytic surface entry which it contacts.

- Coagulation of proteins
- Conversion of Hb to hematin
- As a rule no systemic effect except shock

Mineral Acid
- H₂SO₄
- HNO₃

Organic Acid
- Oxalic
- Carboxylic

Vegetable Acid
- HCN

Alkaline
- NaOH
- KOH

More strictures formation.
Forensic Toxicology:

Poisons Act
Dangerous Drugs Act 1919
Drugs and Cosmetics Act 1930
Drugs and Cosmetics Rule 1940
Pharmacy Act 1945
Drugs Control Act 1948
Drugs and Magic remedies 1950
(Objectionable advertisement) Act
Opium Act 1954
Opium Act 1957
Narcotic Drugs and Psychotropic* 1978
Prevention of illicit traffic* in Narcotic drugs and PSA 1985

Drugs and Cosmetics Rules, 1945

- Framed under: Drugs Act, 1940
- Classification of drugs in schedules:
  - C—Biological and special products
  - E—Poisons
  - F—Vaccines and Sera
  - G—Hormonal preparations
  - H—drugs/poisons to be sold prescription of RMP
  - J—Diseases for cure of which no drug should be advertised
  - L—Antibodies, Antihistaminic, chemotherapeutic agents
  - X—Potential drug of Abuse

Sections of law pertaining of Poisons/Poisoning

39 Cr.P.C. Information to police magistrate
175 Cr.P.C. Investigation
176 IPC Punishment for noncompliance (6 months/1000 Rs)
193 IPC Punishment for false evidence (3-7 years and fine)
202 IPC Punishment for concealing information (6 months/
324 IPC Negligent conduct with respect to poisonous
284 IPC Term max. of 6 months, or fine Rs. 1000 or both
299 IPC Culpable Homicide

Contd.
166 Review of Forensic Medicine

General Management of Poisoning are:

i. Stabilization
   - Scandinavian Regime* is a term used for Anti- Shock measures when the patient is going into shock. It includes A B C D E of resusitation.
   A—Airways
   B—Breathing
   C—Circulation
   D—Drugs
   E—Evaluation

ii. Gut Decontamination: The various methods to remove poison from GIT are:
   - Emesis
   - Gastric lavage
   - Catharsis
   - Activated charcoal
   - Whole bowel irrigation
   - Emesis

   Best method to induce emesis is by inducing GAG REFLEX*
Ipecacuanha is the only pharmaceutical agent recommended to induce vomiting.

**Gastric lavage**

- **The tube (Ewald or Boas tube)**
  - Diameter: 1 cm
  - Length: 1 and ½ meter
  - Mark at: 50 cm
  - Markings at: Lateral
  - Patient position: Left lateral or prone
  - Material:
    - Potassium permanganate: 1:5000
    - Sodium Bicarbonate: 5%
    - Tannic acid: 4%
    - Sodium or potassium Iodide: 1%
    - Calcium lactate: 1-3%
    - Saturated limewater or starch

---

**Contraindication for Gastric lavage**

1. Corrosives (Absolute contraindication except carbolic acid)
2. Convulsants/CNS stimulants use with Precaution
3. Comatose patient
4. Volatile poison
5. Upper GI pathology (Esophageal varices)
6. Hypothermic patient (Cold)
7. Severe heart disease
8. Advanced pregnancy
   - Gastric lavage is useful within 3 hours of ingestion of poison.

Water or normal saline is the most commonly used solution for gastric lavage.

**KMnO₄**

- It is used for oxidisable poisons.
- In opium poisoning* KMnO₄ is used in higher concentrations.
- In opium poisoning* Gastric lavage is done even when opium has been administered through Parenteral route.
- KMnO₄ is not useful in Heavy metal Poisoning.
### Antidote administration

<table>
<thead>
<tr>
<th>Poisons</th>
<th>Antidotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Paracetamol</td>
<td>Acetyl cysteine</td>
</tr>
<tr>
<td>2. Methanol</td>
<td>Methionine*</td>
</tr>
<tr>
<td>3. Benzodiazepines</td>
<td>4-Methyl Pyrazole (fomipazole)</td>
</tr>
<tr>
<td>4. Opiates</td>
<td>Ethyl Alcohol</td>
</tr>
<tr>
<td>5. Organophosphates</td>
<td>Plumazenil</td>
</tr>
<tr>
<td>6. Dhatura</td>
<td>Nalaxone</td>
</tr>
<tr>
<td>7. Botulinum toxin</td>
<td>Atropine</td>
</tr>
<tr>
<td>8. Cyanide</td>
<td>Oximes (P.A.M., D.A.M etc)</td>
</tr>
<tr>
<td>9. Methemoglobinemia</td>
<td>Physostigmine</td>
</tr>
<tr>
<td>10. Thallium</td>
<td>Guanidine</td>
</tr>
<tr>
<td>11. Carbon monoxide</td>
<td>Para-Amino-Propiophenone (4-PAPP)</td>
</tr>
<tr>
<td></td>
<td>Dicobalt Acetate</td>
</tr>
<tr>
<td></td>
<td>Vitamin B₁₂ (Hydroxy cobalamine)</td>
</tr>
<tr>
<td></td>
<td>4-Dimethyl Amino Phenol (4-DAMP)</td>
</tr>
<tr>
<td></td>
<td>Amyl Nitrite + Na Thio sulphate</td>
</tr>
<tr>
<td></td>
<td>Methylene Blue</td>
</tr>
<tr>
<td></td>
<td>Prussian Blue (K Hexa Cyanoferrate)</td>
</tr>
<tr>
<td></td>
<td>Vitamin E (Tocopherol)</td>
</tr>
<tr>
<td></td>
<td>Hyper Baric Oxygen</td>
</tr>
</tbody>
</table>
**Chemical Antidotes**

- Common salt
- Silver nitrate
- Albumen
- Mercury chloride
- Dialyzed iron
- Arsenic
- Copper sulphate
- Phosphorous

1. **BAL**
   - British antilewisite or Dimercarpol.
   - It is given by intramuscular route*
   - Contraindicated in
     - Liver damage
     - G6PD deficiency
     - Iron and cadmium toxicity*

2. **EDTA** is contraindicated in mercury*

3. **Pencillamine** is contraindicated in Arsenic*

4. **Desferoxamine** is also useful in treatment of toxicity with radioactive heavy metals.*

**Universal Antidote:** it is combination of physical and chemical antidotes

- **MCT:** Magnesium oxide (1 part) neutralizes acid without gas formation
- **Charcoal** (2 parts) absorbs alkaloids
- **Tannic acid (1 part)** precipitates alkaloids.

**Coma Cocktail:**

Combination of 3 medicines can be given in unknown poisoning with coma

[remember DNB]

- **Dextrose (50%) 100 ml**
- **Nalaxone 2 mg**
- **B₃(Thiamine) 100 mg.**

4. **Elimination**

**Forced Diuresis**

<table>
<thead>
<tr>
<th>Saline Diuresis</th>
<th>Alkaline Diuresis</th>
<th>Acid Diuresis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohols</td>
<td>Chlorphenoxyacetic acid herbicides</td>
<td>Amphetamines</td>
</tr>
<tr>
<td>Bromide</td>
<td>Chlortipropanide</td>
<td>Chloroquine</td>
</tr>
<tr>
<td>Calcium</td>
<td>Diffusinal</td>
<td>Cocaine</td>
</tr>
<tr>
<td>Fluoride</td>
<td>Fluoride</td>
<td>Local anaesthetics</td>
</tr>
<tr>
<td>Lithium</td>
<td>Methotrexate</td>
<td>Phencyclidine</td>
</tr>
<tr>
<td>Meprobamate</td>
<td>Pethnobarbital</td>
<td>Quinidines</td>
</tr>
</tbody>
</table>

*Contd.*
Hemodialysis

Haemodialysis is useful in:

B—Barbiturates, Bromides, Boric Acid
L—Lithium
A—Alcohol (Methanol, glycols)*
S—Salicylates
T—Theophylline, Thiocyanates

Heamodialysis is not done in

• Kerosine
• Benzodiazepines
• Heroin
• Chloroquine.
• Copper sulphate

Hemoperfusion

Hemoperfusion is useful in:

• Chloramphenicol
• Disopyramide
• Charcoal hemoperfusion is used in Hypnotic–
sedatives [Barbiturates]*
• Ethchlorvynol
• Glutethimide
• Meprobamate
• Methaqualone
• Phenytoin
• Procainamide
• Theophylline

Peritoneal Dialysis effectively removes

• Alcohol
• Long acting barbiturates
• Chloral hydrate
• Lithium
• Salicylates
• Sodium Chlorate