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PRESERVATION OF VISCERA- A REVIEW

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ABSTRACT

Preservation of viscera in all suspected cases of poisoning during medico-legal autopsy, its toxico-chemical analysis by Forensic Science Laboratory and its reliability as testimonial in adjudicating criminal cases in court of law for best interest of justice, has been the matter of debate and of scientific review. At one hand, no scientific evidence is considered as 100 % temper proof and on the hand; evidences should be beyond all reasonable doubts to convict any accused in the court of law. In the situation, when in many cases, either there is no eye witness of a crime or even if eye witnesses are there, chances of them becoming hostile for what so ever reason, court is left with no other option than to rely on scientific evidences and injury report, autopsy report and viscera examination report plays significant role in the administration of justice. Present article is an attempt to revel role of viscera examination report while adjudicating the criminal cases allegedly of poisoning.

KEYWORDS: Preservation of Viscera, FSL, Autopsy, Court, Justice.

INTRODUCTION

Main purpose of preservation of viscera is undoubtedly for chemical examination to detect poison. Not only detection of poison helps to rule out death from several unknown reason but helps to determine the cause of deathalso.

Also, it helps to determine the manner of death i.e. suicidal or homicidal or accidental. It is necessary to preserve viscera where cause of death is already ascertained and which is due to some other reason than poisoning or inhomicidal death from mechanical injury.

AIMS AND OBJECTIVES

1. To discuss the purpose of preservation of viscera.
2. To review the literature on viscera preservation.

MATERIALS AND METHODS

Purposes of Preservation of viscera

1. **In living**

a. In case of poisoning- stomach wash, blood, urine, faeces and vomitus are sent for chemical analysis.

b. For corroborative evidence – examination of Clothes, utensils, bottles

2. In dead body

a. For chemical analysis.

b. In cases of drowning for diatom examination.

c. Culture and sensitivity for suspected septicaemia.

d. For Suspected virus – tissue preservation in 50% glycerine.

e. For Histopathological examination to know cause of death.

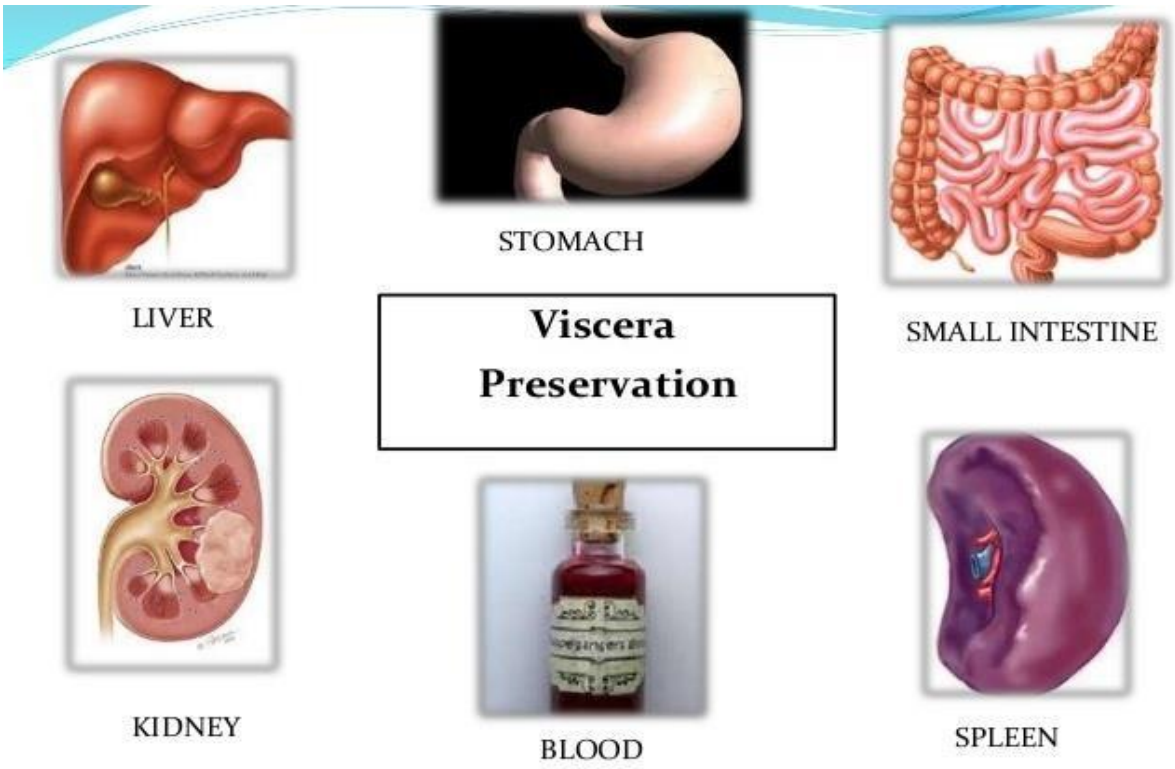
f. For enzyme studies.

g. For DNA finger printing.

Viscera Preservation for Chemical Analysis-Indications

- When the medical officer suspects the presence of **poison** by its smell orby some other evidence while conducting autopsy.
- When the cause of death not established – to exclude poisoning.
- When the cause of death is established but there is also suspicion ofpoisoning.
- When the cause of death could not be found out after a full autopsy andthere is no natural disease or injury.
- In all **decomposed bodies**.
- In spot death **in burns**.
- In **Asphyxial death-** specially **drowning**.
- In **traffic accident** – when suspicion of alcohol consumption.
- When **investigating officer requests** so.

Routine viscera preserved



Special Viscera preservation

- **Liver:** is the most important tissue because it concentrates manysubstances.
- **Heart:** strychnine, digitalis.
- **Brain:** neurotoxic poisons, alkaloids, volatile organic poisons.
- **Bile:** narcotic drugs, cocaine, methadone, glutathione, barbiturates,tranquilizers, opiates.
- In case of **injected poison**, injection site skin, subcutaneous tissues alongwith needle tract weighing about 100gms should be collected. similar material from opposite area is also taken as a control in separate container.
- In case of **inhaled poison** like carbon monoxide, coal gas, hydrocyanicacid, chloroform, or other anaesthetic drugs etc; lung tissues, brain andblood from the cavity of the heart should be preserved.
- **Lung:** Gaseous poison, HCN, Alcohol, Chloroform.
- **Bone:** shaft of long bones, a tuft of head hair, finger and toe nail And some muscles-Arsenic, Antimony, Thallium, Radium.
- **Criminal Abortion:** Uterus, cervix, bladder, rectum and foreign bodies.
- **Blood** from peripheral vein, **lung tissue** and a **cerebrospinal fluid** shouldbe preserved in

a suspected case of **poisoning by alcohol**. In alcohol poisoning, blood should never be collected from the heart, plural or abdominal cavities as it always gives higher results due to proximity of stomach and seepage. The blood from heart or body cavities may be taken for grouping.

- **Bone marrow** from long bones in **skeletonised bodies** may also serve the excellent purpose of toxicological analysis.
- **Skin:** Hypodermic injections, snake bite, corrosives.
- **Hairs, Nails:** Heavy metal poisoning.
- **Spinal Cord:** strychnine poisoning.
- **CSF:** Alcohol intoxication.
- **Urine:** narcotics.
- **Body Fat:** Endrin, DDT.
- **Muscle:** When internal organs are putrefied.
- In **embalmed bodies**, the **Vitreous Humour** usually remains uncontaminated by the process and may serve the purpose of analysing **Urea, creatinine (biochemical) and ethyl alcohol**. For toxicological analysis, skeletal muscles and bone marrow are the only materials available in such cases.
- **Soil samples** from above, beneath and sides of the dead body and control soil samples from distance away should be taken in cases of **exhumed skeletonised dead bodies**.
- In the cases of deaths by **drowning** where the study of diatoms is required, then the **spleen**, rather than **bone marrow** may be most useful material to preserve. control sample of the water in which the body was recovered should also be taken in separate container. care should be taken to ensure that the control sample do not contaminate the spleen or bone marrow during the collection or transportation. spleen tissue may be useful for DNA analysis.
- **Fatty tissues** from abdominal or peripheral region in the cases of Pesticides.

Collection of additional viscera

- **BLOOD**: At least 10 ml collected in a bottle, preferably from peripheralsite such as neck, arm & leg & also from subclavian vessels.
- **C.S.F.**: From cisternal puncture, base of brain and puncture of lateralventricles.
- **BONE MARROW**: From sternum, ileum, femur and vertebrae.
- **URINE**: From suprapubic puncture.

- **MUSCLES**: especially thigh muscles (10gms).
- **BONE:** 200 gm. Or 10 cm, conventionally from shaft of femur till midshaft.
- **NAILS**: removed from their nail bed.
- **SKIN**: a piece of 2.5 cm sq. from the affected area in case of corrosive poisoning and a control is also preserved from the opposite side of the body.
- **BILE**: It is aspired by needle after the abdomen is opened and before the organs are removed.
- **LIVER:** Specimens from the right lobe are preferred from the left lobe to avoid spuriously high concentrations from diffusion from the stomach.
- **VITREOUS:** 2-3 ml. of vitreous from one or both eyes are gently aspirated from the lateral angles of the eye with a 5ml syringe.
- **HAIR:** About 10 gm or less, if available. The head and pubic hair should be plucked out along with the roots, and not by shaving.

Scene of Crime

- The articles collected from scenes of crime in poisoning cases are vomits, purged materials, urine or faecal stains, saliva, seminal stains, clothes, bed sheets and covers, medicines and their empty containers or poisons used by the decease.
- Remains of food and drinks with their containers, cooking utensils etc. and the solids and liquid contained in the traps of wash basin.
- While sending stained clothes, surrounding unstained portion should be sent as control.
- Clothes should be air dried under shade and sent to the the laboratory.
- The saliva or seminal stains for DNA tests may be preserved by drying. After packing, the samples should be kept at room temperature.
- The samples of medicines or poisons recovered from scene of crime or from the possession of the deceased or from any other place should be sent as such in the same original form without adding any preservative. They are required to be sent in airtight and leak proof containers.

Snake and Scorpion bite

- The aqueous washing of bitten area on a clear cotton swab.
- Blood serum or blood of victim.
- The skin portion around the bite area may be a source for venom examination. Skin to be

sent in saturated salt solution.

- The visceral tissues may be sent for examination, if necessary, toconfirm the presence of other poison (viscera are not suitable for detection of venom).

Preservatives used

Sr. No.	Poisoning	Preservative
1	In all cases of poisoning, excluding acid poisoning, but including carbolic acid poisoning.	Saturated salt solution
2	In all cases of acid poisoning except carbolicacid.	Rectified spirit
3	Carbon monoxide poisoning.	A layer of paraffin (to prevent escape of gas)
4	All cases of poisoning including alcoholpoisoning for blood.	Potassium oxalate and sodium fluoride

The viscera collected has to be preserved with preservatives because.

1. There may be a time gap between collection and despatch of the viscera.
2. Viscera may not be analysed immediately by the chemical analyser.
3. If the viscera are not preserved, it will decompose and render the chemical analysis useless.

Dispatch of viscera

- **Bottle 1** – stomach, intestine (proximal 1/3) with their contents.
- **Bottle 2** – half of each kidney, liver and spleen (are cut into multiplesmall pieces).
- **Bottle 3** – 100 ml of blood (or minimum 10 ml).
- **Bottle 4** – only the preservatives; acts as a control.

Precautions while dispatching of viscera

- Viscera + preservative in adequate amount in wide mouth glass bottles, lid should be tightly closed, labelled and sealed.
- Bottles should be filled only 2/3rd and the remaining 1/3rd is left for the gases formed in the bottle.
- On each bottle, a label is put indicating the PM number, date and time ofPM, name, age, sex of deceased, the viscera preserved, the preservative used and signature of medical officer. The ends of label are sealed.
- All bottles are then kept in viscera box (wooden box) which is thenlocked and sealed with labelling.
- The key of the box are then kept in an envelope, which is also sealed andthen handed over

to the police constable in exchange for a receipt.

- The police constable then carries it to the Forensic Science Laboratory.
- Along with the key and Viscera box the following documents are also sent- A copy of *Panchanama*, Autopsy report, Requisition letter by MO to FSL to conduct Chemical Analysis.
- If the viscera is not collected by the police constable/ investigating officer, it is to be kept by the medical officer in safe custody for atleast 6months and can be disposed then.
- After permission from magistrate or
- When informed by the investigating officer (IO) that the case is closed.

Interpretation of Result of Chemical Analysis

1. **If poison found in bottle 1 and absent in bottle 2:** poison not absorbed,death is not due to poisoning, poisoning may be post mortem.
2. **Poison found in bottle 2 and absent in bottle 1:** poison absorbed, ifpoison is ingested it is more than 2-6 hrs before, may be poisoning byother routes, if the level is as that of fatal poisoning- death is due to poisoning.
3. **Poison found in bottle 1 and 2:** poison partially absorbed.
4. **Poison not found in bottle 1 and 2:** poison not detected or it was not acase of poisoning.

DISCUSSION

The preservation of viscera for toxicological analysis is required in all cases of sudden, suspicious and unknown cause of death. Selection and amount of the sample required for toxicology investigations is much more complex and challenging in autopsy cases than in living individual. viscera examination report plays significant role in the administration of justice.

CONCLUSION

From above discussion it can be concluded that preservation of viscera plays animportant role in adjudicating the criminal cases allegedly of poisoning.

REFERENCES

1. Singhal SK, Toxicology at a glance, published by national book depot, Mumbai, reprint edition 2013, chapter 4, viscera preservation, pg. no. 35.
2. Subrahmanyam BV, Parikh's textbook of medical jurisprudence, forensic medicine and

toxicology, CBC publishers & distributors, New Delhi, 8th edition, chapter 35, collection and preservation of biological materials, Pg. no.522.

3. Khan I. et.al, viscera preservation for post mortem toxicological analysis- a review, J Indian Acad. Forensic Med April- June 2016, vol, 38, no. 2.
4. Kumar S. et.al, Scenario of usefulness of viscera preservation, journal of forensic chemistry and toxicology, vol.3, Nov- Dec 2017.
5. https://www.homeopathy360.com/2020/02/27/preservation-of-viscera/
6. Pillay W. et.al, national committee for revised guideline of sample preservation and analysis in medicolegal cases, journal of forensic medicine and toxicology, 1999; 16(1); 46-54.
7. https://forensicfield.blog/preservatives-used-for-different-poisoning-samples/
8. https://www.slideshare.net/NikhilOza/preservation-of-viscera
9. http://www.researchgate.net/publication/314215337-viscera-preservation- for-post-mortem-toxicological-analysis-a-review