



Signs of Death

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*It is the most obvious finding of real death.

***Evaluation of pathological findings is made and whether or not to send samples to laboratories is decided accordingly.**

It does not appear the same in every cadaver of all types and species.

Signs of Death

start with algor mortis and rigor mortis.

They continue until putrefaction and autolysis.

Factors affecting postmortal changes

- 1. Time** between death and necropsy,
- 2. Breed** (the stomach and intestines postmortal tympany in ruminants develop quickly than equides.)
- 3. Nutritional status of the animal**
- 4. The size and age**
- 5. Metabolic status at the time of death**

6. Body temperature at the time of death

7. The amount of bacterial flora at the time of death; their fermentative effect

8. Type of disease (F.E. autolysis develops rapidly in enterotoxemia.)

9. The treatment, especially the level of antibiotics at the moment of death!

10. External effects. (Especially the temperature of the environment etc.)

COMMON POST MORTEM CHANGES

Algor mortis "Cooling of the body "

Rigor mortis "stiffness of death"

Hypostatic congestion/Livor Mortis "Color of death"

Postmortal blood coagulation

Imbibition

Postmortal color changes

Autolysis

Putrefaction

CADAVERIC SIGNS

- body cooling (algor mortis)
- rigidity (rigor mortis)
- lividity (livor mortis)
- putrefaction

VITREOUS POTASSIUM

OTHER BIOCHEMICAL MARKERS

- blood
- vitreous humor
- cerebrospinal fluid
- pericardial fluid
- muscle
- lung

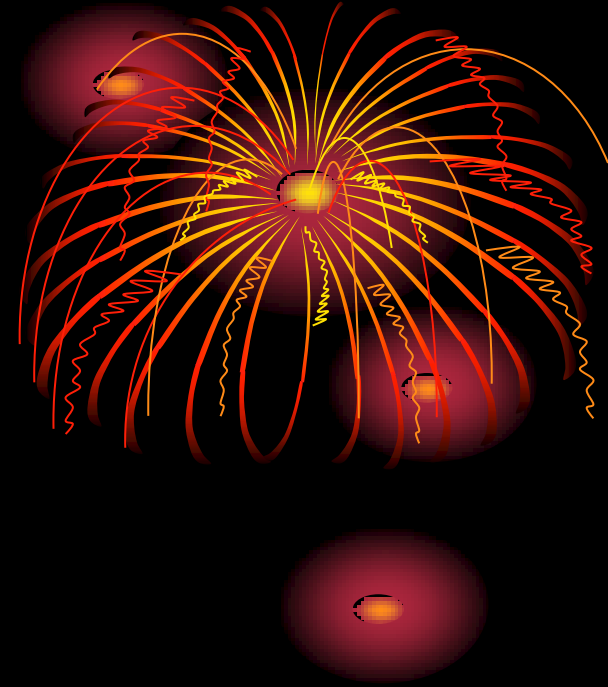
SUPRAVITAL REACTIONS

*early
post-mortem
period*

PUTREFACTION

FORENSIC ENTOMOLOGY

*decomposition
period*



ALGOR MORTIS

ALGOR MORTIS - the temperature of death!!!

Gradual cooling of the animal body after death, and is associated with a fall in ATP.

It's one of the first signs of death!

Algor mortis cools down at about a hour after death, the body begin to cool down at the rate of 0.78C/h.

After the first 12 hours, the body cools down at the same rate until the body reaches the same temperature as the environment.

How environment facts affect those?

- Ambient temperature

develops quickly in the cold environment and slowly in the warm environment.

- Animal's size, current metabolic status, body fat, and amount of hair or wool covering the animal.

*** * * Sheep and pig develops slowly!**

- **At the cachectic animals, the heat goes down faster!**
- **If bacterial fermentation is more in cadavers; initially, the temperature of the cadaver increases slightly.**

How environment facts affect those?

- - Type of disease

- The heat after death goes up faster at clostridial diseases, death after sunstroke, colic and severe muscle contraction.
- Sun stroke and pontine haemorrhage, disturbed heat regulating mechanism.
- Tetanus and strychnine poisoning, due to increase in heat production in the muscle.
- Acute bacterial or viral infection, lobar pneumonia, typhoid fever, encephalitis, etc.
- Intense asphyxial conditions- rise of temp by 2-3 c at death
- **“ Postmortem Caloricity”**

RIGOR MORTIS

Rigor mortis - refers to the contraction and stiffening of muscles after death.

Most literatures consider the fall in the availability of adenosine triphosphate (ATP) as the possible cause of terminal muscle fiber contraction after death.

Other plausible explanation includes the influx of calcium ions after cessation of the sodium pump.

Generally, rigor mortis starts from 1-6 hours after death and passes off in 3-4 days.

Rigor mortis is solved by **the onset of autolysis and putrefaction.**

Especially lysosomes in the cell are broken in the end of autolysis .

Proteolytic enzymes are released and they break down and dissolve the hardness by breaking down actomyosin.

However, several factors influence the onset of rigor mortis and these include the following:

a) **Nutritional status of the animal:** Well-fed animals have large glycogen reserves, and may show a **delay** in the onset of rigor, while cachectic animals may develop **rigor quickly**.

b) **Environmental and body temperature of the cadaver:** Animal cadavers that are exposed to hot temperatures may develop and pass off **rigor mortis quickly**.

c) **Cause of death:** Those that died of **septicaemic diseases** may not develop rigor mortis at all. Once a part of the animal body that has passed into rigor is moved, that part will pass off rigor mortis. This has some significance in human medico-legal cases.

Tetanus and strychnine poisoning, those who die after diseases that cause severe muscle contraction. → onset is early, is severe and lasts long.

Drowning in water, Veratrine, Alcohol and ether poisoning, High body temperature at the time of death → faster

Hot weather like summer days → start Early and short duration

Animals in the coma and cachectic animals, cold weather like winter, Phosphorus poisoning or other muscle degeneration, animals who die from chronic disease → onset is delayed and/ or is mild.