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DEPARTMENT OF VETERINARY PATHOLOGY

POST MORTEM CHANGES

POST MORTEM CHANGES

- Postmortem changes refers to a continuum of changes that occur in a dead body following death OR these changes result from degradation of tissue associated with the release of proteolytic lysosomal enzymes from the cells. These processes (called post mortem autolysis) occur automatically after death of animal.

Post Mortem Changes:- Includes the following changes

Rigor mortis

Algor Mortis

Liver mortis / hypostatic
congestion

Pm clot

PM Imbibition of
heamoglobin

PM Imbibition of bile

PM Softening

PM Staining /
Pseudomelanosis

PMBloat / PM
Emphysema

PM displacement of
organ

PM rupture of organs

The factors influencing the rate of postmortem autolysis

- Temperature- Body temperature of the carcass accelerates postmortem autolysis
- Postmortem Interval- The longer time elapsed the greater degree of postmortem changes in organs.
- Cause and Mode of death
- Condition of the Animal before death
- Tissue-related factor- Expression of PM changes vary from tissue to tissue.

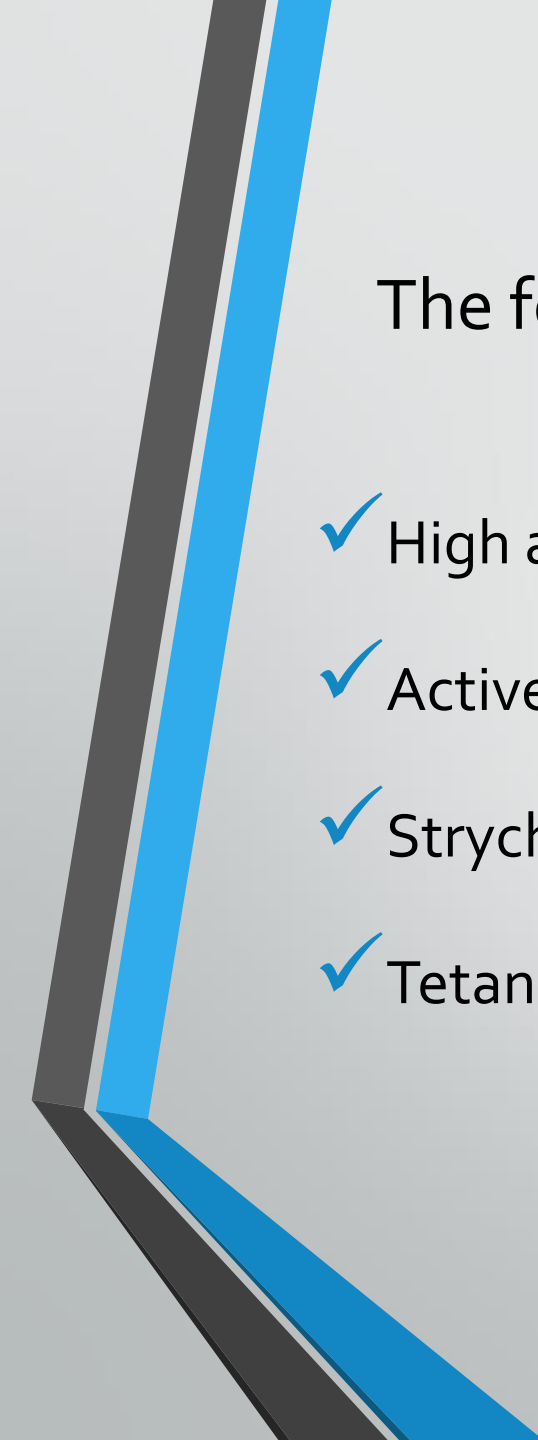
ALGOR MORTIS

- Algor mortis is cooling of the body after death.
- Cooling depends on the following factors:
 - a) Surrounding atmospheric temperature
 - b) State of the body at the time of death
 - c) State of muscular activity of animal prior to death
 - d) Thickness of hair coat or wool
 - e) Adiposity of the animal
 - f) Infection of animal
 - g) Size of animal

RIGOR MORTIS

- This is the contraction of muscles after death so that the joints become stiff and the body is rigid.
- Rigormortis develops first in very active muscles Eg:-Heart ,palpebral muscle.
- Order of rigormortis development:-Heart- palpebral muscles- muscles of head and neck- gradually muscles of forelimb ,the trunk, and hind limb. And passes off in this order.
- Appears in 1 to 8 hrs after death and disappear from 20 to 30 hrs.





The following factors hasten the onset of Rigor mortis-

- ✓ High atmospheric temperature
- ✓ Active exercise – hunting , fighting , racing or struggling
- ✓ Strychine poisoning
- ✓ Tetanus

Causes of Rigor mortis

- When oxygen is no longer present , the body may continue to produce ATP via glycolysis .
- The body's glycogen is depleted , the ATP concentration diminishes, and the body enters Rigor mortis because it is unable to break those bridges , and causes stiffness of muscles. Ca enters the cytosol after death.



Death of animal



Stoppage of blood circulation



Fall in oxygen supply

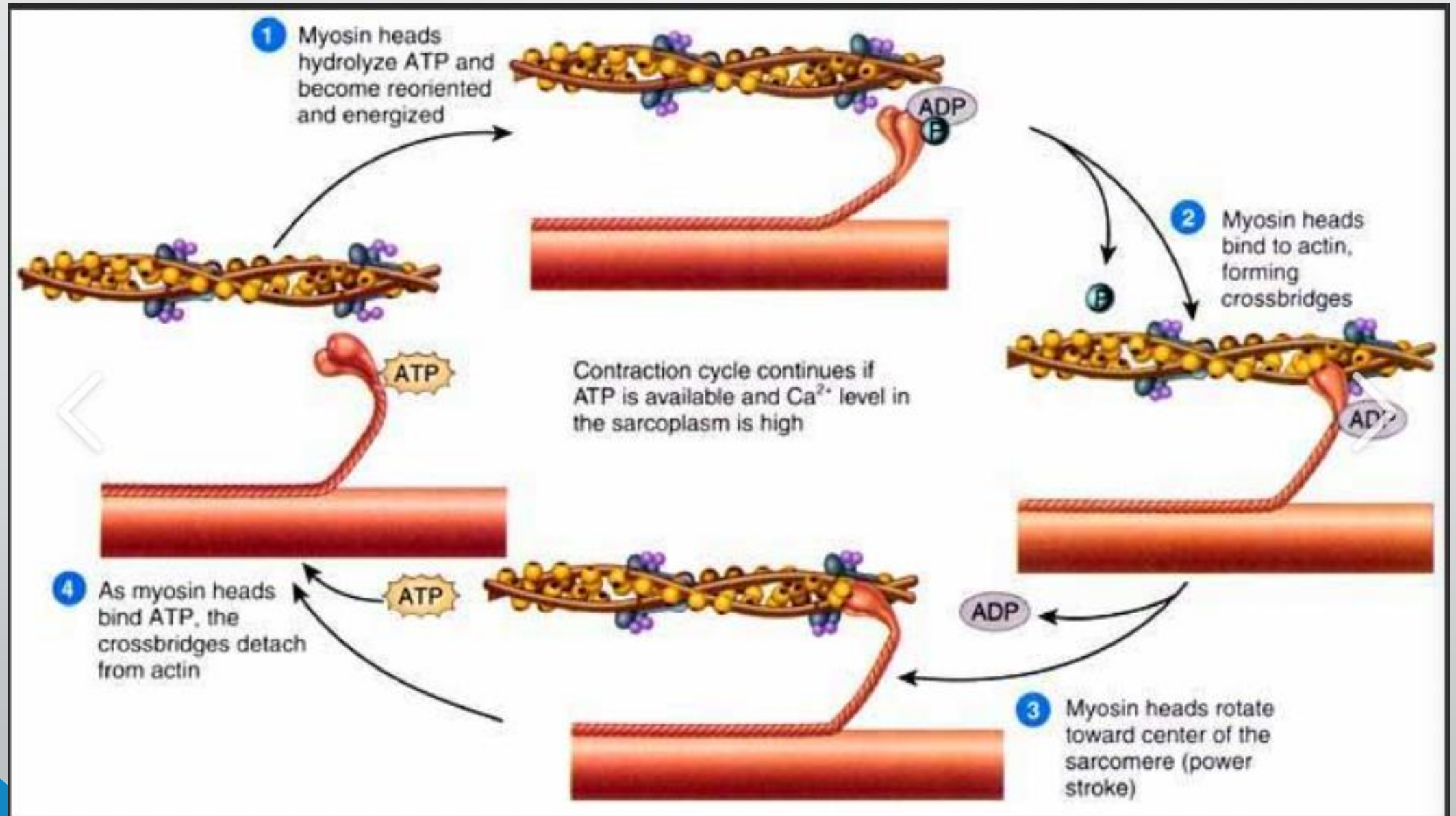


Diminishes of ATP concentration



Muscles can't relax and cause muscles stiffness

Normal mechanism of muscles contraction:-



LIVOR MORTIS / HYPOSTATIC CONGESTION

- It is the gravitational pooling of blood to lower dependant areas resulting in a red colouration.
- Most commonly occur in the Lung because of porous nature of pulmonary tissue.

❖ Hipostase cadavérica (Livor mortis)





POST MORTEM CLOT

- It is the clotting of blood in heart or in blood vessel after death.
- Chicken Fat clot- It is white clot (due to white blood cells and platelets) it is gelatinous mass formed by separation of plasma protein from component of blood.
- Current Jelly clot- It is red part seen in clot (due to red blood cells).



Blood clot in the heart

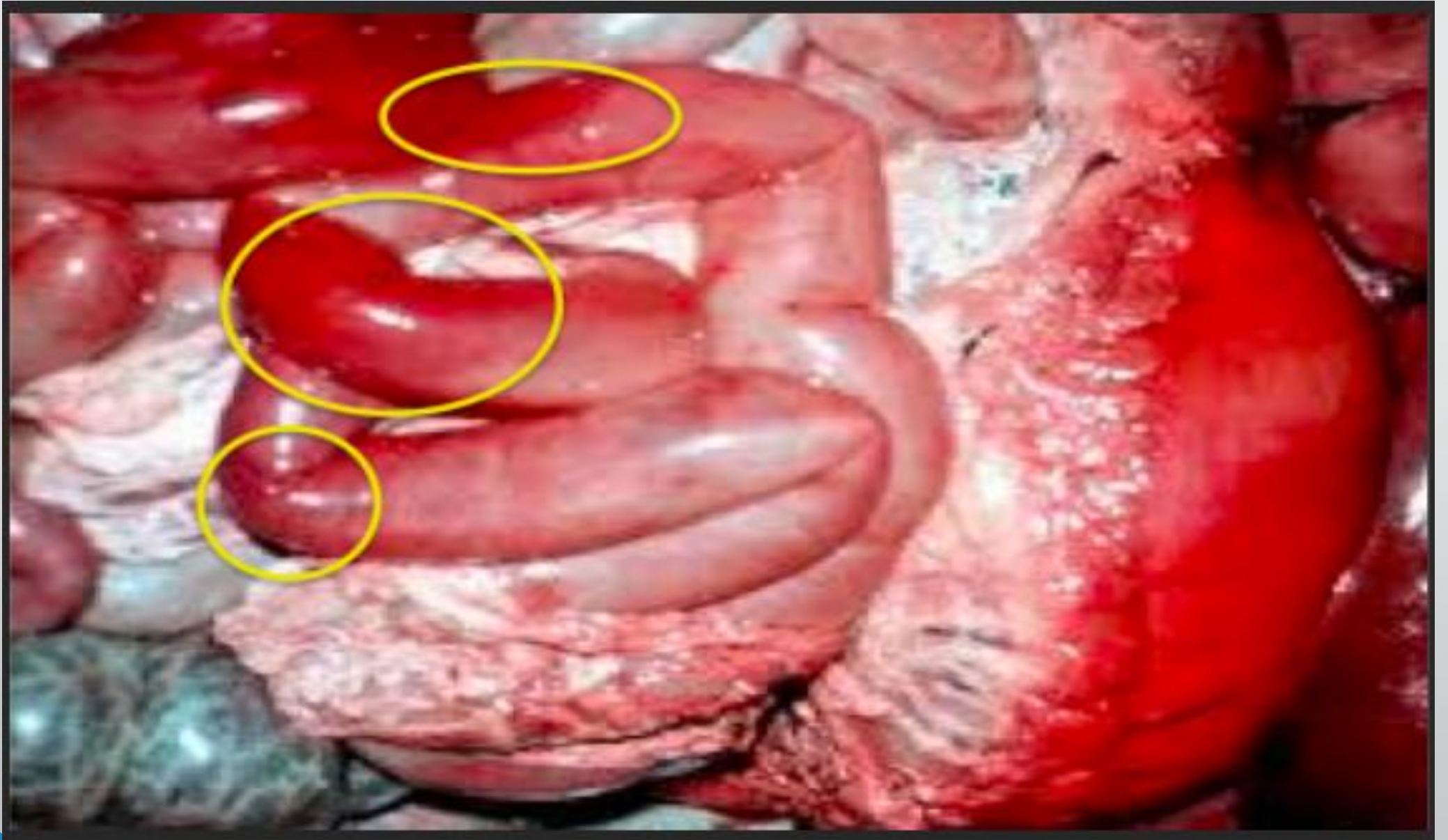


Difference between Thrombus and PM Clot

Character	Thrombus	PM Clot
Size	fill the vessel	Smaller than vessel
Consistency	Friable , dry	Rubbery ,elastic,moist
Surface	rough	Smooth
Attachment	Attached to the endothelium	Weakly attached to the wall
Endothelium	roughened	Smooth not damage

IMBIBITION OF HAEMOGLOBIN

- Pinkish to reddish colouration of tissue due to haemoglobin after death (liberated from lysed erythrocyte).
- This is most evident on the surface of large arteries and outer surface of visceral organ.



POST MORTEM IMBIBITION OF BILE

- Golden yellow colouration imparted on tissues following seepage of bile after death.
- This is most evident on the surface of organs in contact with the gall bladder , on duodenal mucosa and the surrounding liver tissue.



POSTMORTEM SOFTENING

- The tissue are softened by the action of autolytic enzymes of the cells and the proteolytic ferments of the saprophytic bacteria.
- The wall of stomach or intestine may become so thinned during this process due to action of bacteria.
- Postmortem softening of pancreas may release lipase which acting on adipose tissue cause fat necrosis.

POSTMORTEM STAINING / PSEUDOMELANOSIS

- Blackish / greenish discolouration of tissue (specially **Intestine**) after death due to formation of iron sulphide (FeS).
- Putrefaction occur liberated hydrogen sulphide (H₂S) + Fe from Hb = FeS



POSTMORTEM BLOAT / POSTMORTEM EMPHYSEMA

- Gas may accumulate in the rumen , reticulum and intestine due to fermentation of food after death.
- When death due to acute tympanitis ,there is protrusion of tongue ,congestion and haemorrhage of lymph node of the head and neck,oesophagus ,rumen , upper respiratory tract.
- Lungs are compressed and liver is pale.
- Rumen and diaphragm may be rupture.

PM DISPLACEMENT OF ORGANS

- The intestine may be displaced after death due to rolling of carcass or by the accumulation of gas.

PM RUPTURE OF ORGANS

- This may be attributed to softening and handling but devoid of any inflammatory reaction.

Reference

- Ganti A. Sastry , P. Rama Rao Veterinary Pathology (7th Edition)

Thank

you