PATHOLOGICAL FINDINGS ASSOCIATED WITH IONOPHOROUS INTOXICATION IN HORSES.

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Aim of the study: to describe the main changes in myocardial and skeletal muscles associated with ionophorous toxicosis in 11 horses and one donkey affected in two different outbreaks.
Material and methods: in 1997 16 out of 60 and in 2001 11 horses and one donkey out of 17 were ill after feeding with two different commercial brands of horse concentrate. From the 28 sick animals, 16 died and 12 carcasses were submitted for a complete pathological examination. Gross changes were record and samples from selected organs were processed for histopathological examination. Clinical biochemistry was done in 2 horses and samples from the concentrate from the 2001 group were submitted for analysis of ionophorous.
Results: The reported clinical signs were weakness, paresis of hind limbs, reluctance to move, sweating, tachycardia, dyspnea and recumbency.
The *macroscopic findings*: The most affected skeletal muscles were the gluteals, which were pale to slight yellow decolorization. A focal, multifocal to diffuse distribution of pale to yellow decolorized areas were observed in the heart involving the myocardial wall as well.

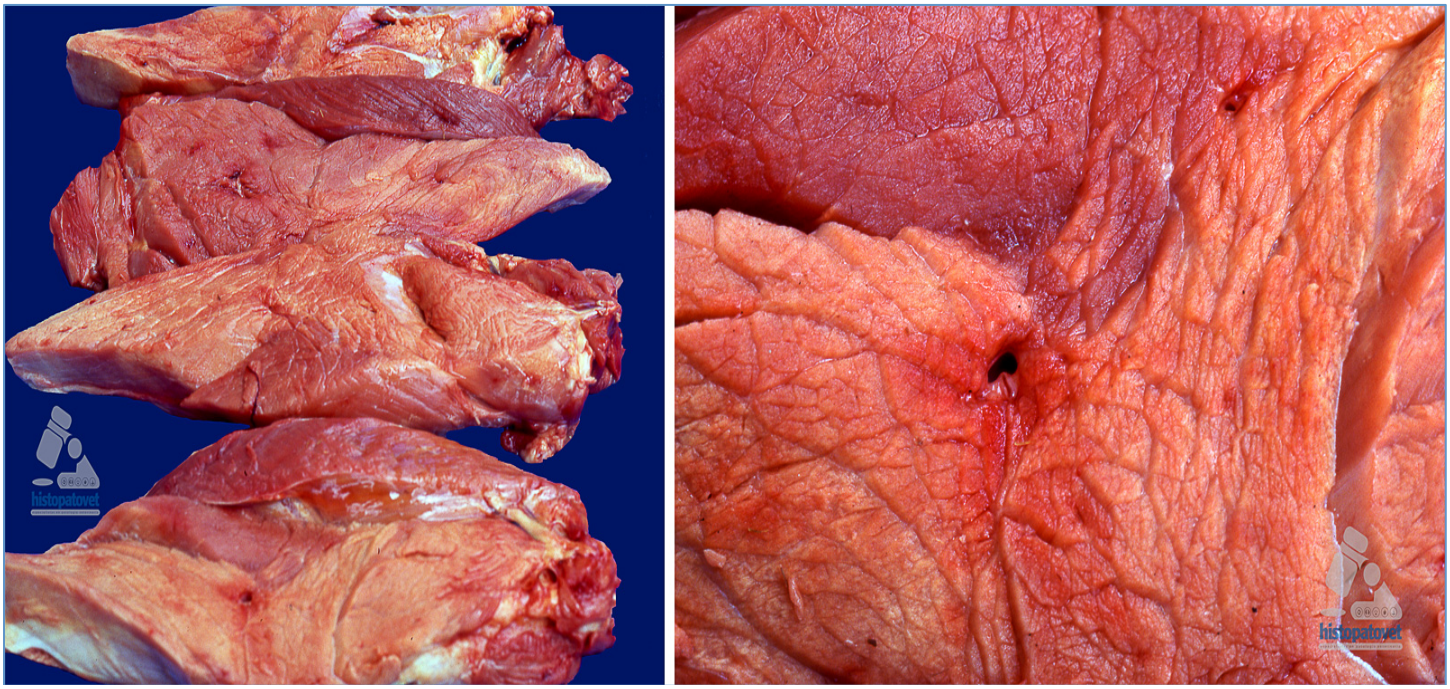

Fig. 1. Gluteals muscles with normal red color and white affected areas.

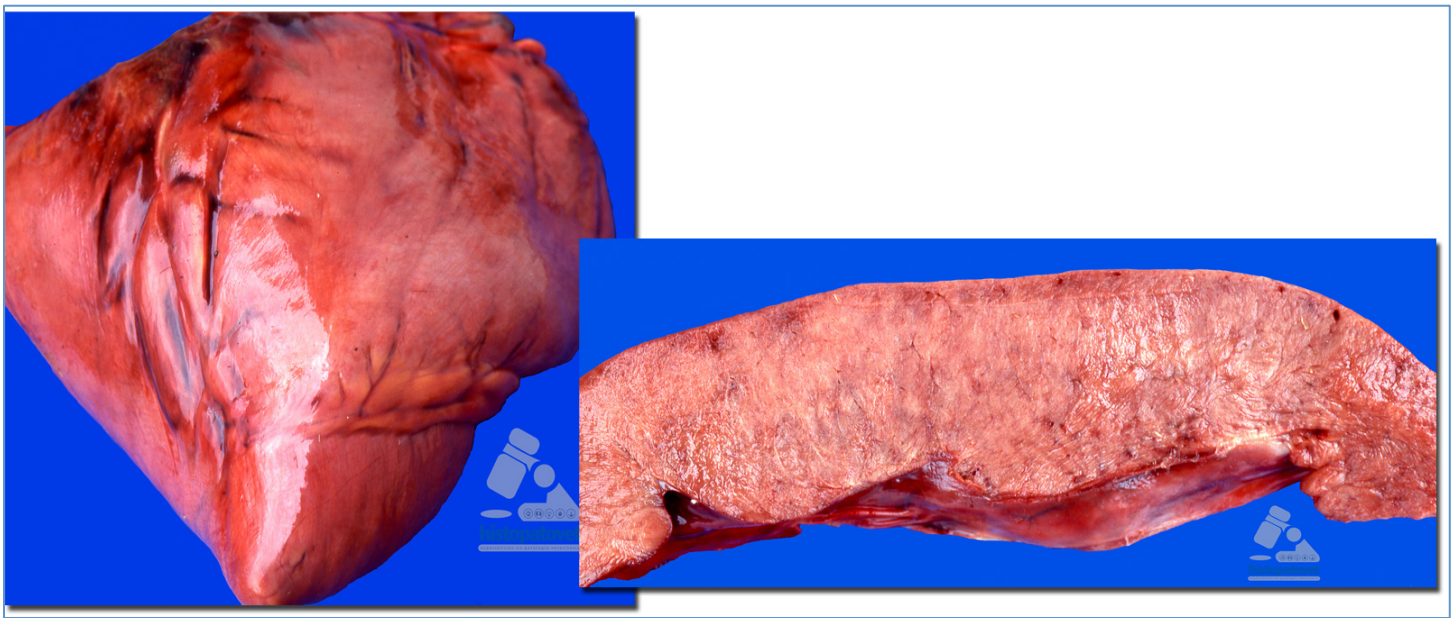

Fig.2. The heart showing a diffuse pale aspect, especially in the cross section of the left ventricular wall.

Microscopic findings included alveolar edema, vacuolar degeneration and chronic passive congestion in the liver, and tubular nephrosis and glomerulopathies.

Both skeletal and myocardial myofibrils exhibited different lesions of variable grades (slight to severe).

There was skeletal degeneration, vacuolization, hypereosinophilia, and necrosis with regeneration and macrophage infiltration.

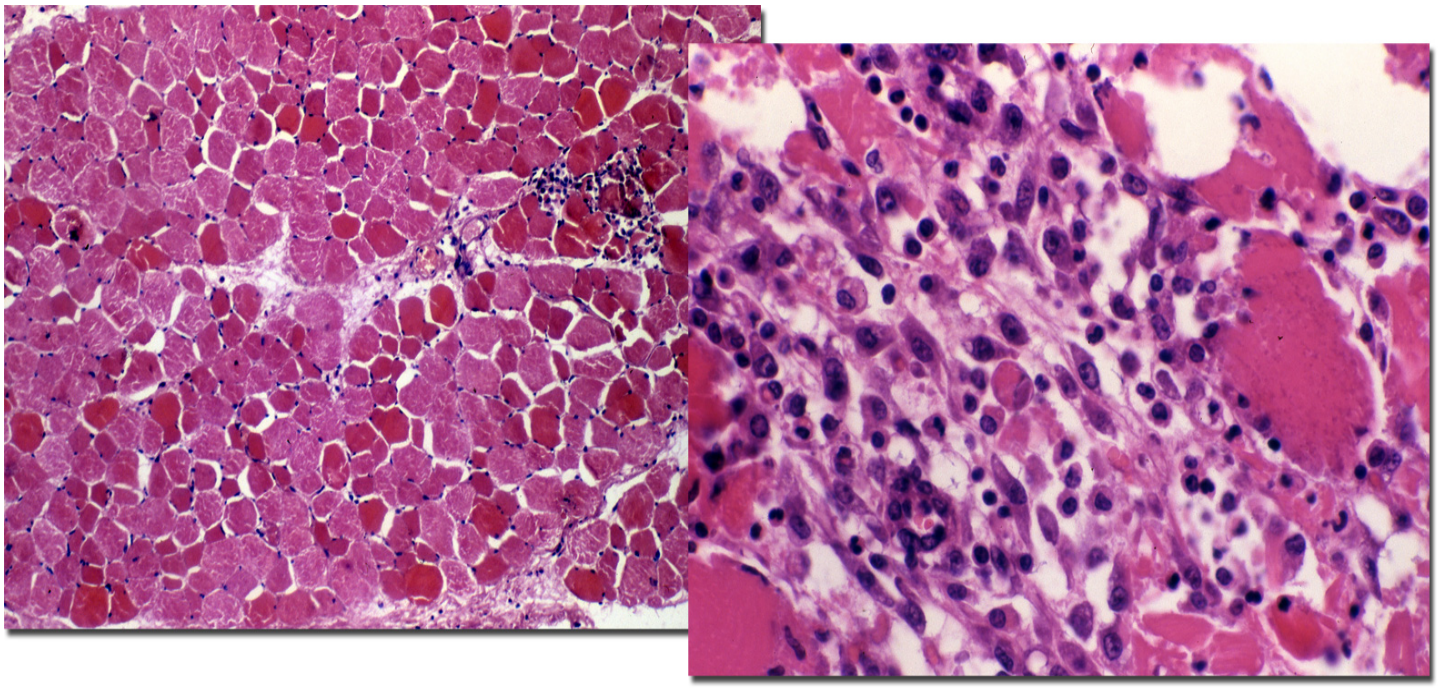

Fig.3. Miofibrilar hypereosinophilia with necrosis and reparation.

The myocardium also had an interfibrilar edema and granular degeneration of the cytoplasma with necrosis and fibrosis.

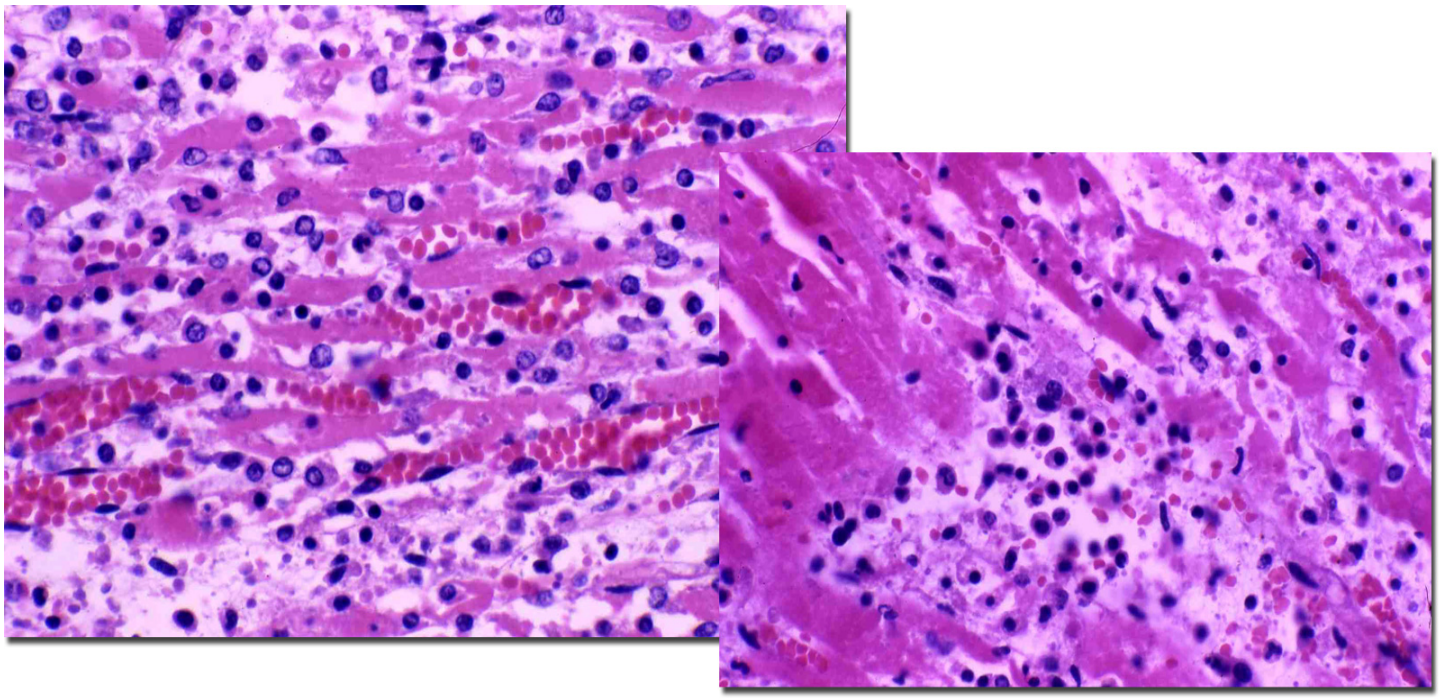

Fig.4. The myocardium with sever miofibrilar necrosis.

Biochemistry of the two horses revealed normal values aside from the creatine phosphokinase, which was elevated 66.726 and 171.504 till (lab reference 3.737 till). Thin layer chromatography was compatible with ionophorous presence.

Conclusion: ionophorous are used as feed additives in the prevention of coccidiosis in broiler chickens and to improve feed efficiency of ruminants, however, horses are extremely sensitive to their toxic effect. Diagnosis is usually base on history and clinical signs plus the cardiac and skeletal lesions. Diagnosis requires confirmation with assays of the feed and gastric contents.