Hematoxylin - eosin- Staining in a Dog Polyarteritis Nodosa

ADRIAN STANCU, ALINA GHISE, MARIUS PENTEA, DANA EMILIA VELIMIROVICI*,SORIN PASCA, LILIANA CARPINISAN*, ROMEO TEODOR CRISTINA*

Faculty of Veterinary Medicine Timisoara, 119 Calea Aradului, 300645, Timisoara, Romania

Polyarteritis nodosa (PAN), or. panarteritis, periarthritis nodosa, Kussmahl disease is a condition of non-infectious primary medium caliber muscular arteries and small, peripheral or visceral lesions characterized by segmental and disseminated along multistage vessels, localized mainly in the bifurcation points. It is a complex disease process that coexists with acute injuries and chronic alternate with free wall. It is included in the group collagen diseases (auto) immune [2, 8, 11, 13 - 17].

In etiology PAN were indicted on several factors: HBV antigen, human, hypersensitivity to drugs (sulfonamides, penicillin, thiouracil etc.), infectious agents (PCM virus, the virus IEA, streptococci, staphylococci) [1] genetic factors. Experimental studies converge on the hypothesis of immunological pathogenesis that complex imine assets virus IEA, streptococci, staphylococci (polyphasic, transmural, neutrophilic, leucocytodastic, macrophagic, lympho-plasmocytic and finally fibrotic vasculitis. The elastosis predisposes to micro-aneurisms and micro-hemorrhages. Unlike the perivascularis, the inflammatory process is extended to the surrounding tissues.

Keywords: polyarteritis nodosa, dog, fibrinoid necrosis

Polyarteritis nodosa (PAN), or. panarteritis, periarthritis nodosa, Kussmahl disease is a condition of non-infectious primary medium caliber muscular arteries and small, peripheral or visceral lesions characterized by segmental and disseminated along multistage vessels, localized mainly in the bifurcation points. It is a complex disease process that coexists with acute injuries and chronic alternate with free wall. It is included in the group collagen diseases (auto) immune [2, 8, 11, 13 - 17].

PAN starts with edema with swollen endothelial intima and the subendothelial layer dilaceration. Plasma fibrin precipitation and average fibrinoid formation then the entire wall thickness, evolving into fibrinoid necrosis (fig. 2.)

The consequences are dependent thrombosis PAN acute or chronic ischemia followed by infarction in the kidney, spleen, lymph nodes, lungs, and nervous system, sometimes infarction, aneurysm and hemorrhage, secondary atrophy and fibrosis [6, 12].

The results and discussions

A cadaver dog aged 14 months post-mortem examination showed the surface of the heart were observed thickening of blood vessels (fig. 1.)

PAN starts with edema with swollen endothelial intima and the subendothelial layer dilaceration. Plasma fibrin precipitation and average fibrinoid formation then the entire wall thickness, evolving into fibrinoid necrosis (fig. 2.)

Chemotactic properties of fibrin and fibrinoid induce massive infiltration with neutrophilic and eosinophilic texture; improves the optical differentiation), alcohol dehydration (five steps: 70, 80, 90, 100% and 100% alcohol, each step for two hours), clearing with benzene, paraffin wax at 56°C, embedding tissues into paraffin blocks, trimming of paraffin blocks (6 µm), sections mounting on the glass slides (using Meyer albumin), hematoxylin - eosin [-22]. Staining was performed as follows: deparaffination of tissue sections in benzene, rehydration using decreasing concentrations of alcohol, rinsing in distilled water, hematoxylin staining, alcohol, eosin staining water removal using increasing concentrations of alcohol, cover slide mounting [22]. Hematoxylin will stain the nuclei in blue and the mucins in light blue. Eosin will stain the cytoplasm in pink, collagen in pale pink, red blood cells in bright red, and colloid in red. The microscopic examination is useful as differentiating diagnosis method only if chemical preparation of samples is applied [4, 5, 10, 22].

Results and discussions

A cadaver dog aged 14 months post-mortem examination showed the surface of the heart were observed thickening of blood vessels (fig. 1.)

PAN starts with edema with swollen endothelial intima and the subendothelial layer dilaceration. Plasma fibrin precipitation and average fibrinoid formation then the entire wall thickness, evolving into fibrinoid necrosis (fig. 2.)

Chemotactic properties of fibrin and fibrinoid induce massive infiltration with neutrophilic and eosinophilic

Fig. 1.Periarthritis nodosa. Yellow-white nodular thickening of subepicardial branches of coronary arteries Dog

Fig. 2.Periarthritis nodosa. Fibrinoid necrosis of the media of an artery. Infiltration of neutrophils and mononuclear cells predominantly in the adventitia. Dog. HE
granulocytes wall and perivascular tissue. After phagocytic fibrin, granulocytes degenerates, their nuclear fragments, creating the appearance of **leukocytoclastic vasculitis** acute. Proteases released soaking produce arterial wall, followed by saciform expansion (true aneurysm) [15, 17].

Chronic form develops in connective tissue rich in collagen fibrosis scars wall making a deposit and fibers form concentric layers around the arteries and away in neighboring tissues, segmental artery thickening moniliform forming nodules (hence the name **arteritis nodosa** ) is the only Long Island Sound until vasculitis true distinguishing them from other inflammatory processes, there is no pressure fibrinoid necrosis or cellular invasion of the wall material, the inflammatory process is restricted only to the adventitia (perivascular) or only the intimate (endovasculitis) [7, 14, 21].

**Conclusions**

Polyarteritis (PAN) was diagnosed histologically a dog aged 14 months who presented necropsy bleeding diathesis and thickening heart sinuos surface.

Specific lesions were present in the muscular arteries of medium caliber.

Changes are segmental disseminated along the vessels, fibrinoid necrosis of the media of an artery. Infiltration of neutrophils and mononuclear cells predominantly in the adventitia.

**Acknowledgements:** This research work was carried out with the support of the project Dezvoltarea infrastructurii de cercetare, educate si servicii in domeniile medicinei veterinare si tehnologiilor inovative pentru RO 05, cod SMIS-CSNR 2669.

**References**

5. STANCU, A., CRISTINA, R., AHMADI, M., CARPINISAN, L., GHISE, A., PENTE, M., BERCEANU VADUVA, D.M., Hematoxylin - eosin-methylene Blue Staining in a Dog Hemangiosarcoma Case, Mat. Plast., 52, no. 4, 2015, p. 514