

BLOOD VESSELS IN EXUBERANT GRANULATION TISSUE IN HORSES: A HISTOLOGICAL ANALYSIS

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INTRODUCTION Exuberant granulation tissue (EGT) in horses is a frequent complication in second intention healing of limb wounds, that results in delayed wound healing and/or unacceptable wound cosmesis. Previous studies have shown that scar tissue is associated with an excessive angiogenic response characterized by an immature and leaky vascular network. Recent data show that immune cells, such as macrophages and neutrophils are involved in the regulation of angiogenesis. In this study we investigated these immature and leaky blood vessels and their associated macrophages and neutrophils using different histology techniques such as immunohistochemistry based on DAB, immunofluorescence, different histology stains and transmission electron microscopy (TEM).

MATERIALS AND METHODS Samples were obtained after routine excision of protruding EGT from healing distal limb wounds in equine patients. The samples were immersed in 3.5% formaldehyde and imbedded in paraffin, except for the TEM samples where Karnovski fixative (2% paraformaldehyde, 2.5% glutaraldehyde and 0.1M Na-cacodylate buffer) was used and a resin as imbed material. For the immunology-based techniques an antibody against CD31 was used for the visualisation of the blood vessels and MAC387, an antibody against calprotectin was used as a marker for macrophages, monocytes and neutrophils.

RESULTS AND DISCUSSIONS The histological techniques showed clearly two distinct types of blood vessels: *normal* and *aberrant* blood vessels. The aberrant blood vessels could easily be recognised due to their enlarged endothelial cells that protruded into the vessel lumen. Also, a massive influx of immune cells such as macrophages and neutrophils was observed in the EGT.

CONCLUSION The presence of aberrant blood vessels in EGT indicates that the angiogenesis in EGT formed during the healing process is of pathological nature. It would be very interesting to investigate if we could assist blood vessel normalization by interfering with the inflammatory response in order to improve wound healing.

Key words: *angiogenesis, blood vessels, exuberant granulation tissue, macrophages, histology*

Presentation: Can be oral or poster.