

7 Summary

„Diagnostic anaesthesia of joints and further synovial institutions – possibly acting as a perineural infiltration anesthesia? A study about the diffusion pattern based on the example of Disulfinblau VN 150”

The aim of the present study was to criticize the selectivity of intrasynovial injections into the distal interphalangeal joint, the navicular bursa, the digital flexor tendon sheath, the fetlock joint, the carpal synovial sheath as well as the joints of the carpus and tarsus.

Therefore different synovial institutions of 57 fresh limbs of horses were alternately filled with 0.15 % Disulfinblau solution, the legs were placed in a freezer at minus 21 °C and afterwards transversial saw cuts were made. Subsequently an anatomical evaluation of the spread of the injected substance in the saw cuts was undertaken and documented photographically.

Disulfinblau and local anaesthetics were assumed to have an analogical pattern of distribution, both substances were placed on a par and therefore possible anesthetized regions would show a blue colouration.

As results of this study after the singular intrasynovial injections certain blue- coloured regions have occurred. They originate from communication relationships and from direct infiltration, including an unilateral or both side colouration of the big nerve trunks.

Especially in terms of possible perineural infiltration an anaesthesia of the distal interphalangeal joint seems to be able to additionally desensibilize the navicular bursa, the navicular bone and its suspensory ligaments, the distal phalanx, distal parts of the deep digital flexor tendon and parts of the corium of the wall and sole. Similar regions would be achieved with an anaesthesia of the navicular bursa. The injection of the digital flexor tendon sheath is even able to reach a much bigger field by anaesthesia of the palmar or plantar nerves. As a consequence it should be considered, that diagnostic anaesthesias of all synovial structures in the region of the digit are too uncertain for exact localization of the navicular syndrome.

Because of its ligamentous apparatus the fetlock joint is up to occasional exceptions resistant to diffusion and its anaesthesia seems to be relative selective. Yet the proximal sesamoideal bones were not anesthetized for sure.

Whereas the injection of the radiocarpal joint hardly could lead to a spread of the local anaesthetic on the nerve branches of the median or ulnar nerve, the injection of the carpal synovial sheath can possibly act as a perineural infiltration. This would exceed the effects of a high palmar nerve block anaesthesia.

An anaesthesia of the intercarpal joints is assumed to include the origin of the suspensory ligament and the accessory ligament. This seems to be based on a partial direct infiltration and/or a possible block of the palmar metacarpal nerves. Similar results should be expected for the plantar metatarsal nerves after injection of the distal tarsal joints. If this is the case it has to be considered for therapeutical purposes, that an intrasynovial medication is on no account sure to completely affect this region.

Furthermore diagnostic anaesthesias of the tarsus are able to reach the N. fibularis profundus, which is followed by a block of the dorsal metatarsal nerves.

While using diagnostic intrasynovial anaesthesia at least a certain degree of scepticism relating to their selectivity should be kept in the back of the practitioners mind. However they are despite sometimes confusing results an indispensable part of the lameness examination and in most cases and if correct interpreted an inestimable support.