

The role of neurohumoral modulation in fracture healing

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PROPOSITIONS

for the thesis

The role of neurohumoral modulation in fracture healing - lifting a tip of the veil -

1. The expert opinion of TBI accelerating fracture healing is increasingly supported by experimental research results, but still lacks confirmation from a large prospective randomised clinical trial. (*Chapters 2, 3*)
2. The neurotransmitter substance P influences the gene expression of important proteins in the early phases of fracture healing and the biomechanical strength of bone in the late phases of fracture healing. (*Chapter 4*)
3. Micro-vesicles isolated after femoral fracture induction, play an important role in the proliferation and viability of osteoblasts during fracture healing. (*Chapter 7*)
4. Intramedullary stabilized femur fractures exert an ambivalent influence on the activity of circulating neutrophils and pulmonary neutrophils in the early phases of fracture healing. (*Chapter 8, 9*)
5. The heterogeneity of the circulatory neutrophil pool increases after femoral fracture, with the occurrence of a new subset of CD11b^{high}/CD11a^{high}-neutrophils. (*Chapter 8*)
6. The CatWalk gait analysis system has the potential to become the gold standard procedure for the evaluation of gait in small animal fracture models. (*Valorisation*)
7. The increasing privatization of the health care system threatens the sincere and proper indication of surgical procedures.
8. Human medicine means to cure occasionally, to alleviate often, and to comfort always.
Original: 'La médecine c'est guérir parfois, soulager souvent, consoler toujours' (French medieval aphorism)
9. There are surgeons, who manage to perform three dangerous operations to restore the condition from before the first one.
*Original: 'Es gibt Chirurgen, denen es gelingt mit drei gefährlichen Operationen den Zustand von vor der ersten wieder herzustellen' (Kurt Pfeifer, German pathologist, *1921)*