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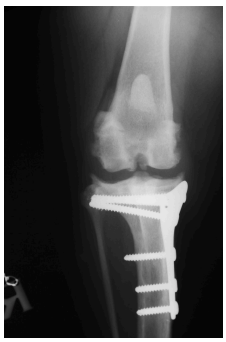
Do NSAIDs inhibit bone healing?

Short answer – Limited clinical significance?.

There has been much discussion about the evidence base for clinical decisions vets make. The question as to whether NSAIDs inhibit bone healing is one such controversy. Preclinical research in rats suggested a potential link to impaired bone healing.



The role of prostaglandins in homeostasis (gut, kidney) and their potential to cause GI adverse effects has been well discussed elsewhere. NSAIDs also have paracrine and autocrine effects on non-neural tissues, including osteoclasts/blasts, and so it is not unreasonable to ask if COX-inhibition may affect healing. The question as to whether NSAIDs inhibit bone healing could also relevance in OA, e.g. the progression of subchondral bone clefts [4, 5].

Four reviews summarise the current evidence:

1. **Barry [2]** is a good review of the veterinary field. The author states **a variety of factors affect bone healing, including '…surgical *expertise, vascularity, infection, fracture gap, debris…*',** to which one could add concurrent disease(s) affecting bone health. These factors complicate any assessment of the effect of NSAID.
2. **Pountos et al. [7]**. Reviews the human field, Table 2 lists NSAIDs for which an effect on healing has been demonstrated. The authors also noted contradictory results, e.g. ibuprofen at the same dose was shown to delay healing of rat fractures in one study but no effect in another.
3. **Marquez-Lara et al. [6]** noted the overall quality of clinical research into the subject is poor, leading to contradictory results.
   - Poor quality research (Coleman Methodology Score) showed NSAID inhibited fracture healing.
   - Better quality research showed there was no effect [6].
4. **Gallaher (2019)** showed no difference in bone healing at the site of experimental osteotomy after 14d post-op NSAID. However, there was slight reduction in radiographic bone density after 8 weeks NSAID. This could have relevance for dogs on long-term NSAID for OA, who also have fracture repairs [1, 3].

There is an ethical obligation to provide analgesics for OA pain, or following fracture repair with associated soft tissue damage. The absence of widespread failure of orthopaedic repairs suggests the preclinical results have limited clinical relevance. Clinical judgement should be used when prescribing NSAIDS >14d post-op.

References

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