Two cases of malnutrition associated with locomotor problems in growing puppies without alterations of x-ray density of long bones

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Introduction
Two growing dogs of mixed breed were presented to our nutrition consultation service partly with severe locomotive problems, mainly an apparent instability of ligaments and tendons.

Case history of „Skouggi“:
- hound mix from Greece
- male
- 3-4 months old
- actual body weight: 5 kg
- mature body weight: 19 kg

Clinical examination and x-rays:
- highly emaciated
- severe distortions of legs
- overextensions of flexor tendons, mainly of forelegs
- inability to walk

Dietary therapy:
- Commercial complete dog food

8 weeks later:
- reversion of distortions and normal locomotion!!

Case 2

Case history of „Henry“:
- mixed breed
- male
- 7 months old
- actual body weight: 22 kg
- mature body weight: 28 kg

Clinical examination and x-rays:
- frequent patella luxation (several times a day)
- knee joints without pathological findings
- slight displasia on hip joints
- litter mates were healthy (fed a balanced diet)

Diet survey:
Composition:
- 875 g beef meat (green tripe, omasum, flesh)
- 35 g rice flakes
- 9.6 g mineral supplement from algae (34% Ca, 0.08% P)
- 1 g extract of green lip muscles
- 65 g dried tripe and gorgé
- 3.6 g vegetal oil (2-3 tbsp/wk)
- 19 g eggs (2/wk)
- 37 g oxtail (130 g/wk)

⇒ multiple nutrient deficiencies (P, Cu, Zn, vitamin A and D)
⇒ Ca requirement was met, Ca:P ratio 2.9:1

Dietary therapy:
⇒ diet was adjusts to the recommended requirements
5 months later:
⇒ frequency of patella luxation decreased to once in a month

Discussion
Deficiency of phosphorus or copper during growth has been reported to cause distorted legs. The clinical signs in these cases resembled experimental phosphorus deficiency in cats and dog (cf. also Dobenecker & Kienzle). However, copper deficiency cannot be excluded. Both should be considered in cases of leg problems in growing puppies without lesions on the x-rays typical for calcium malnutrition.

In contrast to severe calcium malnutrition the prognosis of this kind of growth disorder is rather hopeful!

References
Dobenecker B, Kienzle E (2008) Normal calcium and low phosphorus intake in puppies leads to extremely bowed legs which are reversible by phosphorus repletion, ESVON Congress, Vienna