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Author(s)	KAWAGUCHI, Kayo
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NUTRITIONAL SECONDARY HYPERPARATHYROIDISM OCCURRING IN
A STRAIN OF GERMAN SHEPHERD PUPPIES

Kayo KAWAGUCHI

*Department of Comparative Pathology,
Faculty of Veterinary Medicine,
Hokkaido University, Sapporo 060, Japan*

Eight German shepherd puppies, with ages between 66 and 174 days (7 of which had the same parents) had common symptoms, such as astasia with deformation of limbs. Of the 8, 5 were examined pathologically.

Upon presentation, the puppies had bilateral flexion and swelling of carpal joints, thin hindlimbs, severe wobbling and underdevelopment of the trunks region. Grossly, all puppies showed moderate to severe softening and cortical thinning of long bones. Histopathologically, moderate to severe bone resorption by active osteoclasts, proliferation of fibrous connective tissues between trabecular bones, proliferation of osteoblasts, osteoid formation and delayed bone calcification were observed. Chief cells of the parathyroid were swollen with abundant cytoplasm. Ultrastructurally, the parathyroid chief cells had increased numbers of ribosomes and rough endoplasmic reticula, and a well-developed Golgi apparatus, suggesting hypermetabolism.

The puppies were fed a diet consisting of 80% steamed rice and 20% raw meat. Some of the puppies were given calcium supplementation. It was calculated that though the diet contained the required calcium level, it contained over 18 times the required level of phosphorus.

From the results, the present cases were diagnosed as nutritional secondary hyperparathyroidism caused by a diet containing too much phosphorus. It was suggested that an existing familial factor concerning parathyroid sensitivity to the serum calcium concentration might be one of the causes of this condition.