Nutritional osteodystrophy in a free-living red squirrel (Sciurus vulgaris)


The results of the radiological and histological examinations denote a calcium deficiency at the site of bone growth, while failure of destruction of cartilage columns suggests a vitamin D deficiency. If these interpretations are correct, then the artificial feeding with nuts (almost ad lib), apple, sultanas and raisins may have been responsible for the osteodystrophy. It is well known that nuts contain relatively little calcium and a high proportion of phosphorus, including phytic acid which reduces the absorption of calcium by forming insoluble calcium salts in the gut (Abrams 1950). Apple, sultanas and raisins contain no vitamin D, and apple contains very little calcium (Anon 1970). Sultanas are also rather deficient in calcium, being about the same as roasted peanuts (Anon 1970). In the artificial feeding, however, there was ample evidence that at least some of the squirrels were supplementing this diet with the seeds of pine cones (Pinus sylvestris), the nutritional constituents of which appear to be unknown. They were also observed to strip the bark from silver birch trees (Betula pendula) and lap the sap which oozed from the wood.

If the artificial feeding was responsible for the osteodystrophy it is difficult to understand why only one squirrel showed evidence of clinical disease. It is possible, however, that this particular animal may have been the weakest of the litter or had been deserted before it was weaned. Under these circumstances it would probably have obtained insufficient milk from its dam resulting in an inadequate mineral intake. Its condition would then have been worsened by eating the artificial diet. Illness and inappetance due to parasitism and pneumonia are unlikely to have been contributory causes of the osteodystrophy, especially as other red squirrels affected in this way have been examined and found to have normal bones, (Hime and Keymer, unpublished observations).

The cause of the osteodystrophy therefore remains uncertain and it is impossible to determine whether it developed before or after the squirrel was artificially fed. The fact that the squirrel weaned started to be seen when first observed, however, may be misleading, as it may have been present previously, but not noticed until it was ill although most of the squirrels could be identified because they had torn ears and other distinguishing features.

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REFERENCES


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