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PARASITIC PNEUMONIA IN A KOALA (*PHASCOLARCTOS CINEREUS*) FROM VICTORIA, AUSTRALIA

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A moribund, mature, male koala (*Phascolarctos cinereus*) from Mt. Macedon, 60 km northeast of Melbourne, Victoria (37° 30' S, 144° 40' E) was submitted to the Veterinary Research Institute for euthanasia. Clinical examination revealed only a suppurative arthritis in the left stifle joint.

The animal was killed with an overdose of barbiturate administered intravenously. At necropsy, gross lesions were confined to the suppurative arthritis.

Histopathologic lesions were found only in the lung where there was a mild parasitic interstitial pneumonia. This was characterized by a few nematodes in bronchioles and many more in respiratory bronchioles, alveolar ducts and alveoli. Infiltration of neutrophils, eosinophils and mononuclear cells around proximal airways and into alveolar walls was conspicuous. Hyperplasia of peribronchiolar lymphoid nodules and the presence of Langhan's giant cells, particularly around bronchioles and respiratory bronchioles, were also prominent. Necrotic foci were observed in lung parenchyma; mild smooth muscle hypertrophy and hyperplasia occurred in the walls of bronchioles and pulmonary arterioles.

Adult female nematodes in airways contained many larvae. Thin hyaline membranes representing egg shells were observed around larvae inside females, but not around the few larvae observed free in airways.

Significant localized inflammatory response to adult nematodes and free larvae which had escaped from their egg shells was not observed, although giant cells were occasionally found adjacent to adult worms.

The only prominent inflammatory response occurred around bronchioles and respiratory bronchioles, in the walls of a few arterioles and in occasional necrotic foci in pulmonary parenchyma. The latter frequently centered on small masses of material resembling degenerating larvae or remnants of nematode cuticle with an associated inflammatory response characterized by infiltration of eosinophils, neutrophils and some giant cells. This suggested that the host response to this pulmonary parasite was directed at dead worms, dead larvae and egg shells from which larvae had hatched. The continual expulsion of such foreign material may have been sufficient antigenic stimulation to account for the inflammatory reaction observed around proximal airways.

The pathogenesis of the pneumonia is unclear; the lesions observed were mild and no respiratory distress was noted in the live animal suggesting limited clinical significance.

Various disease syndromes have been reported in koalas throughout their geographic range, but none have been attributed to parasitic helminths (Arundel et al., 1977, In: *The Biology of Marsupials*, Stonehouse and Gilmore (eds.). University Park Press, London, England, pp. 147-148; Backhouse and

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Bolliger, 1961, *Aust. J. Zool.* 9: 24-37; Bergin, 1978, *The Koala*, Zoological Parks Board of N.S.W., Sydney, Australia, 239 pp; Dickens, 1976, *The Koala in Health and Disease*, Proc. Post-Graduate Committee in Vet. Sci., U. of Syd. 29: 105-117; McKenzie, 1981, *Aust. Vet. J.* 57: 243-246). Until now the only known helminth of the koala was *Bertiella obesa* (Zschokke, 1898), an anoplocephalid cestode occurring in the small intestine and restricted to this host (Beveridge, 1976, *Aust. J. Zool. Suppl. Ser.*, No. 44, pp. 1-110). The nematode lungworm reported here and identified as *Marsupostrongylus* sp. (specimen deposited in CSIRO, Division of Wildlife Research, W/L HC No. N 1250) represents only the second helminth recorded from the koala. The worm, measuring 3-4 mm in length, was similar to *Marsupostrongylus longilarvatus* Spratt, 1979, from Macropodidae, differing only in the form of the proximal extremity of the gubernaculum.

A single male lungworm also differing from *M. longilarvatus* and the koala lungworm only in this feature is known from the brush-tailed possum

(*Trichosurus vulpecula*). As normal variation in the morphology of the gubernaculum of *M. longilarvatus* is unknown, the koala lungworm cannot be identified to species.

The following metastrongyle lungworms were examined histopathologically in the listed hosts: *M. longilarvatus* in *Wallabia bicolor*, *M. coulstoni* Spratt, 1979 in *Vombatus ursinus*, *M. lanceolatus* Spratt, 1979 in *Antechinus stuartii*, *M. dorrigensis* Spratt, 1979 in *Thylogale thetis*, *M. bronchialis* Mackerras and Sandars, 1953 in *Perameles gunnii* and *Filaroides pilbarensis* Spratt, 1979 in *Antechinus rosamondae*. Pathologic findings were similar to those associated with *Marsupostrongylus* sp. in the koala and suggested that irrespective of the site of adult nematodes in the lungs, a mild to severe interstitial pneumonia ensued with the most prominent reaction occurring in and around proximal airways.

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