J. Vet. Malaysia (1996) 8(2): 69-71

SHORT COMMUNICATION

MORE CASES OF SHEEP PULMONARY ADENOMATOSIS

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SUMMARY

The lungs of nine sheep aged between 7 months to 2 years revealed neoplastic growth. Histological findings confirmed the diagnosis to be sheep pulmonary adenomatosis. The alveoli were lined with cuboidal or columnar shaped cells, which resemble papillary projections towards the alveolar lumina. These acini of adenomatous growth which still lies intact to or detached from the alveolar walls partially or completely obliterated the alveolar lumina. Similar neoplastic cells were observed lining the bronchioles. The importance of the disease is discussed.

Keywords: Sheep pulmonary adenomatosis, longtail sheep.

Sheep pulmonary adenomatosis (SPA) also known as pulmonary carcinomatosis or "Jaagsiekte" meaning "driving sickness" is a viral disease characterised by slow and progressive development of pulmonary neoplasm (Moulton 1990). The exact causative agent of this transmissible neoplasm has not been established although retrovirus has been associated with the disease. Herpes-like particles have also been observed in the lungs of sheep with pulmonary adenomatosis (Sharp, 1987). Affected animals usually manifest reduced exercise tolerance, dyspnoea and may become febrile when secondary bacterial infection occur (Moulton, 1990).

Sheep pulmonary adenomatosis in Malaysia was first reported by Krishnan and Paul (1994). Four adult sheep, age between 3 to 4 years and one lamb, age 7 months had been reported to develop this tumour in the lungs. This paper reports more cases of pulmonary adenomatosis affecting sheep at an early age between 7 months to 2 years.

Longtail sheep were introduced into the Ladang Ternakan Bebiri Chalok, Setiu, Terengganu in early 1989. Between August 1994 to July 1995, 6 longtail and 2 cross bred sheep between 9 months to 2 years of age were found dead. Clinical signs manifested were weakness, emaciation and recumbency. The affected animals were also dyspnoeic and had nasal discharge. During this period, a 7 month cross-bred sheep from Rancangan Ternakan Bebiri Darat Bari, Setiu, Terengganu was also affected.

Lung tissues fixed in 10% formalin were submitted to the Regional Veterinary Laboratory in Kota Bharu. The formalin fixed specimens were embedded in paraffin wax, sectioned at 5 µm and stained with haematoxylin and eosin for histo-

Microscopically, the alveoli were lined with cuboidal or columnar shaped cells forming acini of adenomatous growth. These cells had large, round to ovoid nuclei and were arranged either singly or stratified which resemble papillary projections towards the alveolar lumina (Figure 1). Alveoli which were lined by these cells had centrally and basally located nuclei. Occasionally, cells with foamy cytoplasm were evident. These cellular projections which still lies intact to or detached from the alveolar walls were observed to partially or completely obliterate the alveolar lumina. Some affected alveoli also contained macrophages. Adjacent unaffected alveoli appeared to exhibit the presence of numerous macrophages with or without pale or acidophilic foamy intracytoplasmic

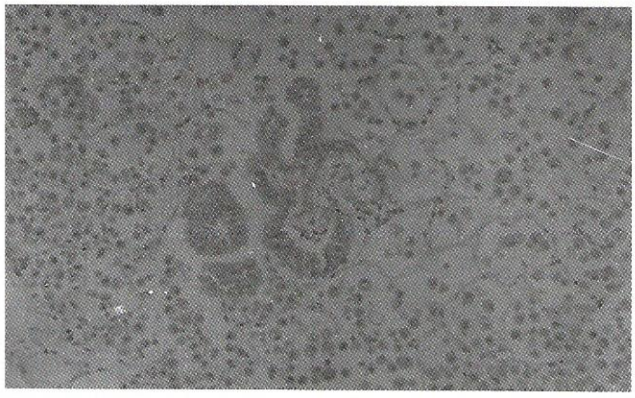

Figure 1. Photomicrograph of the lung of an affected sheep showing alveoli lined with cuboidal and columnar shaped cells forming papillary projections towards the alveolar lumina. Note adjacent unaffected alveolar lumina containing numerous macrophages H

vacuoles. Some of the macrophages at these adjacent have undergone karyolysis. The bronchioles were also lined with cuboidal or columnar shaped cells but were less severely affected in comparison to the alveoli. No peribronchiolar lymphoid hyperplasia was observed as reported by Krishnan and Paul (1994).

The adenomatous neoplasm seen in this study is consistent with that reported earlier (Krishnan and Paul, 1994). In the present study both male and female longtail and cross bred sheep between 7 months to 2 years had been infected with the causative agent of the disease leading to pulmonary adenomatosis. Recovery from the disease do not occur once the typical signs are manifested (Moulton, 1990). We believe that the disease will become increasingly important and that other breeds of sheep and possibly goats could contract the disease. Sharp *et al.* (1986) have reported successful experimental transmission of SPA in a goat. The disease in sheep has been reported in many countries and may lead to outbreaks involving 50-80% mortality (Dungal *et al.*, 1938; Dungal, 1946; Cutlip and Young 1982). The insidious nature of the disease and manifestation of clinical signs in advanced lesions can cause clinical diagnosis and control measures difficult. Signs of dyspnoea after been driven can be helpful in diagnosis and the outpouring of copious, thin, mucoid exudate from the nostrils when the hind limbs are raised is regarded as pathognomonic (Yates 1988, Moulton 1990). Vaccine trials using formalin-treated lung tissues have been conducted but there is doubt as to the nature of the disease attended by Shirlaw (1956).

Therefore preventive and control measures should be considered important and seriously taken into account in sheep management systems prior to the development of a suitable vaccine to combat the disease.

ACKNOWLEDGEMENTS

The authors wish to convey their gratitude to the Director General of Department of Veterinary Services Malaysia for his kind permission to publish this manuscript. We would like to thank Dr. Palanisamy, Head of Kota Bharu Regional Laboratory and also those who were involved directly or indirectly in the successful making of this manuscript.

Table 1. Data of pulmonary adenomatosis affected sheep

No.	Date received	ID No.	Farms	Breed	Age	Sex	Complaints
1	24.8.94	1320/94	PPBC	Cross	10 mths	F	Found dead
2	8.9.94	137/94	PPBC	LT	24 mths	F	Weakness, Recumbency
3	7.11.94	1654/94	PPBC	Cross	10 mths	F	Weakness, Emaciation
4	15.11.94	1664/94	PPBC	LT	24 mths	M	Weakness, Recumbency
5	25.11.94	1710/94	PPBC	LT	9 mths	F	Weakness, Emaciation
6	11.2.95	212/95	PPBC	LT	12 mths	M	Found dead
7	3.7.95	1134/95	PPBC	LT	18 mths	M	Found dead
8	10.7.95	1209/95	PPBC	LT	18 mths	M	Emaciation, Respiratory problems
9	12.2.95	271/95	RTBDB	Cross	7 mths	M	Recumbency, Respiratory problems

Abbreviations:
PPBC : Pusat Penempatan Bebiri Chalok
RTBDB : Rancangan Ternakan Bebiri Darat Bari

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RINGKASAN

LAGI KES ADENOMATOSIS PULMONARI BEBIRI

Peparu sembilan ekor bebiri berumur 7 bulan hingga 2 tahun menunjukkan pertumbuhan neoplasia. Penemuan histologi mengesahkan diagnosis adenomatosis pulomonari bebiri. Alveolus dijidari sel berbentuk kuboid atau kolumnar, yang menyerupai unjuran papila ke arah lumen alveolus. Asinus pertumbuhan adenoma yang yang terlekat atau tertanggal daripada dinding alveolus, secara separa atau sepenuh menyumbat lumen alveolus. Sel neoplasia yang serupa telah dicerap menjidari bronkiol. Kepentingan penyakit dibincang.