

*Brief Communication*

CHRONIC POISONING IN A LAMB GRAZING PHALARIS  
ARUNDINACEA

Phalaris poisoning or phalaris staggers is a neurologic disease of sheep and cattle grazing on fresh growth of *Phalaris tuberosa*, and it is presumed to be caused by an indole alkaloid or a toxin in or on the *Phalaris* plant (*Hartley* 1978). The disease occurs in Australia, New Zealand and South America. One similar disease has been reported in New Zealand in sheep grazing *Phalaris arundinacea* (*Simpson et al.* 1969). This paper is the first report from Europe on an analogous disease in a 6 months old lamb grazing *P. arundinacea* in the south-western part of Norway.

*P. arundinacea* (reed canarygrass) is widespread in Norway, and has during the last century been recommended for swampy soils. Old fields with *P. arundinacea* can therefore be found in the coastal part of the country. During the last 10 years, American species have been introduced as pasture plants, and have to some extent displaced indigenous species (*Berg* 1978).

A flock of sheep were taken from mountain pastures at the end of September 1984, and 50 lambs about 5 months old were put on *P. arundinacea* aftermath on a farm in Rogaland in south-western Norway. The pasture had been reseeded with American seeds 6 years previously. This year it had been harvested twice and was in a state of active growth when the lambs were introduced.

One month later one lamb was found ill with central nervous symptoms. It was treated by the local veterinarian with thiamine and sulphonamides, and was submitted to this laboratory the following day. At arrival, symptoms were incoordination, stiff gait, head nodding, hyperexcitability, tremors and partial blindness. Symptoms were heavily aggravated by handling, resulting in tetanic convulsions. Rectal temperature was 40°C; appetite was normal.

Blood samples taken on the day of arrival to the laboratory and 3 weeks thereafter, and examined for 15 various components, showed no abnormal findings except slightly elevated serum iron (320 µg/dl) and pyruvate (1.57 µg/dl) at arrival. Three weeks

later all values were normal. Examinations on acetylcholinesterase\* in blood gave normal results (Nafstad, personal communication 1984).

The animal was tentatively treated with oxytetracycline, thiamine, Ca, Mg and atropine, but showed no improvement during the following month. The lamb was therefore slaughtered, and the head and liver were returned for histopathology.

On slicing the formaline-fixed brain there was a symmetrical discolouration (grey/green/blue) in the grey matter of the brain stem, especially in di- and mesencephalon, including various nuclei of the trigeminal nerve, the lateral geniculate body (Fig. 1) and the red nucleus. Histopathological lesions comprised yellow-brown pigment granules within the cytoplasm of neurones (Fig. 2), particularly in the mid portion of mesencephalon, affecting the nuclei mentioned. Only a few scattered pigmented neurones could be found elsewhere in the brain stem. Pigmented neurones were either normal or showed all grades of degeneration (Fig. 2). The white matter of large parts of the brain stem showed axonal swelling and fragmentation (Wallerian type degeneration, Fig. 2, A). No specific changes were observed in the liver. The clinical symptoms, gross pathology and histopathology correspond to the description made by *Simpson et al.* (1969).

Alkaloid concentrations (gramine, tryptamine) in indigenous reed canarygrass populations are largely low (below 2000 µg per g d.m.), but in some areas high values (6500 µg) have been found (*Berg 1978, Johnsen 1978*). The imported American species have been found to contain larger amounts of alkaloids than the indigenous types (*Hovin 1978*). *P. arundinacea* from this actual pasture was not sampled until 1 month after outbreak of the disease, but will be examined for alkaloids later.

In this case, no other lambs were affected, and health condition in the flock was generally good. Oral dosing with cobalt prevents development of phalaris staggers (*Gallagher et al. 1966*). It is interesting to note that lambs in this area often show ill-thrift curable by cobalt supplement (*Ulvund & Øverås 1980*).

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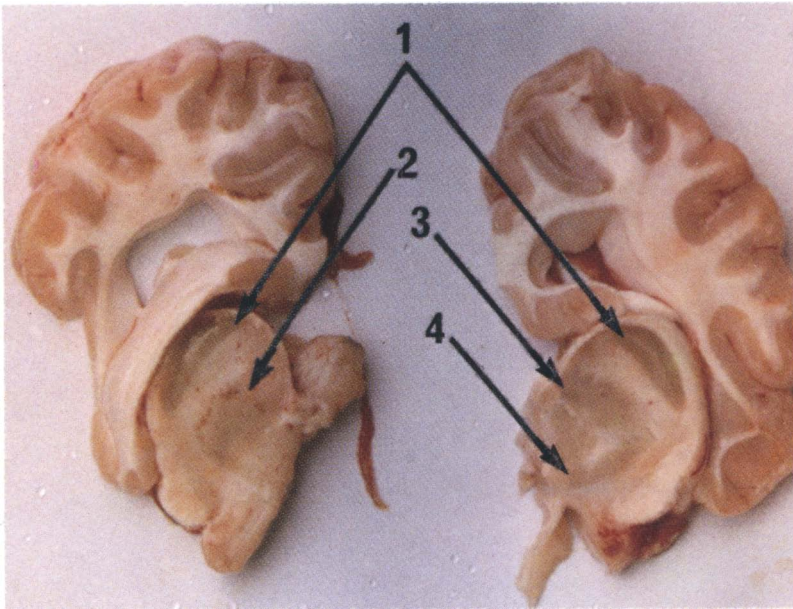


Figure 1. Cross section through mesencephalon of lamb with symptoms of chronic phalaris poisoning, showing grey-green-blue discoloration of Corpus geniculatum laterale (1) and various nuclei of central mesencephalon (2, 3, 4).

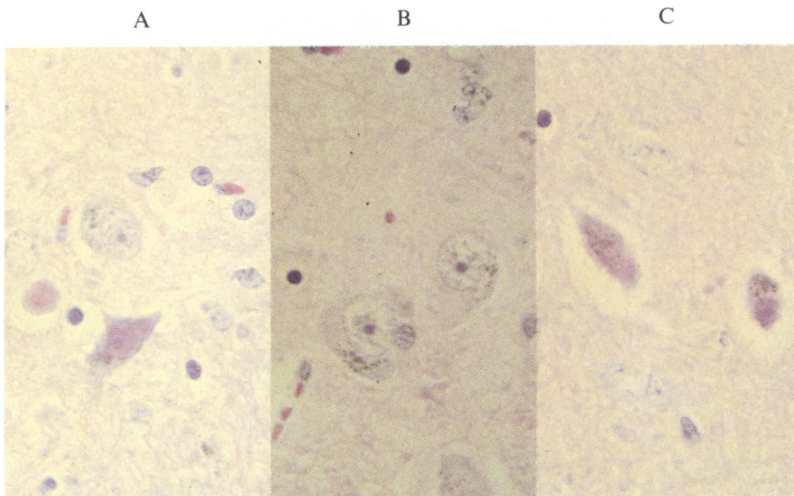


Figure 2. Photomicrographs of mesencephalon from lamb with symptoms of chronic phalaris poisoning. Degenerating (A, C) and intact (A, B) neurones containing yellow-brown pigment granules, and Wallerian degeneration of axons (A) can be seen. HEX1000.