

First report of oligodendroglioma in a sheep

A Derakhshanfar^{a*} and A A Mozaffari^b

ABSTRACT

Oligodendrogliomas occur most commonly in the dog, but have also been reported in cattle, horses and cats. A 1-year-old sheep with neurological disturbances, including blindness, ataxia, circling and incoordination was referred to the veterinary clinic of Shahid Bahonar University of Kerman. Following euthanasia and necropsy, a soft, relatively well-demarcated mass was observed in the white and grey matter of the right cerebral hemisphere, close to the sylvian fissure in the right cerebral hemisphere. Microscopic examination revealed a sheet of densely packed tumour cells with hyperchromatic nuclei, lightly staining cytoplasm and characteristic perinuclear halo effect which is consistent with a diagnosis of oligodendroglioma. This is the 1st report of oligodendroglioma in sheep.

Keywords: oligodendroglioma, sheep.

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INTRODUCTION

Oligodendrogliomas are derived from oligodendrocytes⁴. Oligodendroglioma occurs most commonly in the dog but has also been reported in cattle and cats⁸.

Oligodendrogliomas are generally located in the white or grey matter of the cerebral hemispheres, with decreasing frequency caudally from the olfactory bulb, frontal, temporal and piriform lobes to the parietal and occipital areas. They rarely occur in the brain stem or spinal cord⁴. In humans 5 % of gliomata that arise from the oligodendrocytes are termed oligodendrogliomata⁷.

CASE HISTORY

A 1-year-old male Iranian fat-tailed sheep slowly developed progressive neurological disturbances consisting of difficulty in moving and coordination. It was referred to the veterinary clinic of Shahid Bahonar University of Kerman. The patient suffered from fever, blindness, ataxia, hypermetric gait, depression, facial paresis, head tilt, strabismus, nystagmus, unilateral loss of menace reflex and circling. Because of the neurological disorders and poor prognosis, the owner elected for euthanasia. Following euthanasia, the animal was submitted for complete necropsy. At necropsy a soft and relatively well-demarcated yellow-greyish mass measuring $0.5 \times 0.5 \times 1$ cm was observed

in the white and grey matter of the cerebral hemisphere close to the sylvian fissure (Fig. 1). No significant macroscopic findings were observed in other organs. Brain and representative samples of other tissues were fixed in 10 % buffered formalin and 1 week later the brain was sectioned transversely at 3 mm intervals. These and other tissue sections were routinely processed, embedded in paraffin, cut at 5 μ m, stained with haematoxylin and eosin, and examined under a light microscope.

RESULTS AND DISCUSSION

Microscopic findings included a cell-rich, non-encapsulated tumour, composed of a diffuse sheet of round to slightly ovoid cells. Tumour cells had hyperchromatic nuclei with a variable amount of lightly staining cytoplasm and prominent cytoplasmic borders. The tumour was densely cellular with almost no stroma. A characteristic perinuclear halo effect was created. There were no mitotic figures or necrosis. The tumour was infiltrated by a fine, proliferative microvasculature (Fig. 1). Based on these histopathological findings, oligodendroglioma was diagnosed. No significant histological findings were detected in the remaining brain parenchyma, spinal cord and other organs.

Oligodendroglioma is the easiest of the glial tumors to recognise, even when growing rapidly. Mucinous degeneration, cyst formation, haemorrhage and dystrophic calcification may occur in some of these tumours^{2,3}. There are no clear indices of malignancy, although all must be regarded as clinically malignant². Sudden unexpected death in a horse due to a cerebral oligodendroglioma has been reported⁶. The main differential diagnosis

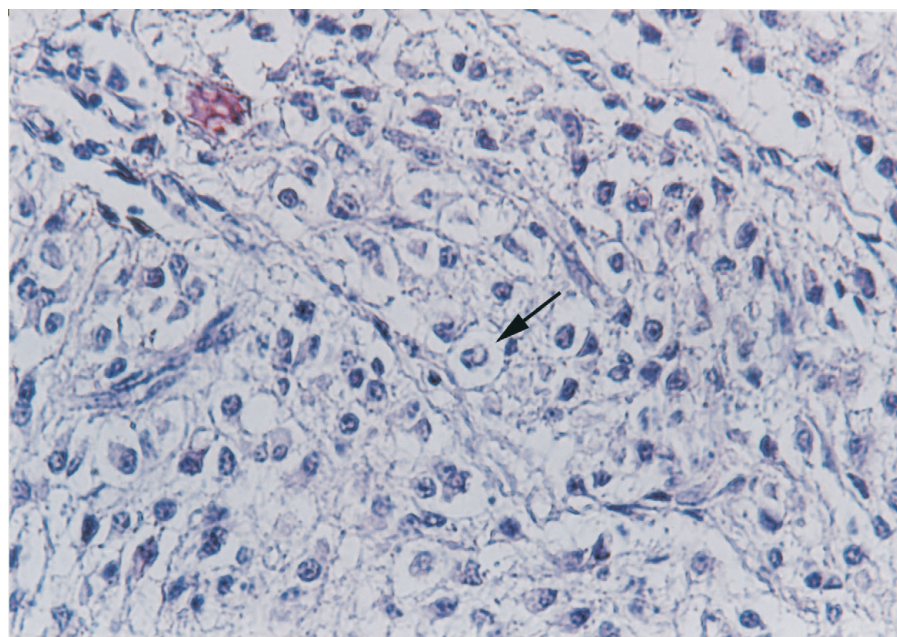


Fig 1: Oligodendroglioma. A dense sheet of uniform cells with hyperchromatic nuclei, lightly staining cytoplasm, well-defined cytoplasmic margins and characteristic perinuclear halo effect (arrow). (H&E $\times$ 400)

^aDepartment of Pathobiology, School of Veterinary Medicine, Shahid Bahonar University of Kerman, Iran.

^bDepartment of Clinical Studies, School of Veterinary Medicine, Shahid Bahonar University of Kerman, Iran.

*Author for correspondence. E-mail: damin@mail.uk.ac.ir

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that needs to be considered, particularly in a tumour with intraventricular growth is the central neurocytoma, but this rare tumour has so far only been identified in humans. This tumour of neuroectodermal origin has been reported in a French bull dog, a cat, and a Japanese black heifer^{1,5,9}. It seems that clinical signs are mostly due to the space-occupying effect of the tumour³.

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Book review — Boekresensie

OIE Scientific and Technical Review: Avian influenza

Coordinated by T C Mettenleiter

2009. Vol. 28(1), World Organisation for Animal Health (OIE) Paris. 419 pp., paperback. Price €55. ISBN 978-92-9044-760-3

The *Scientific and Technical Review* of the OIE (World Organisation for Animal Health) is published every 4 months for the use of the veterinary and medical professions, and especially for veterinary services. A vast body of literature appeared as a result of intensified interest in avian influenza since the emergence and subsequent spread of highly pathogenic notifiable (HPNAI) H5N1, boosted by massive increases in funding for research. This publication is a compilation of recent findings and represents a comprehensive overview of the present understanding of avian influenza, with contributions from the foremost experts in the field. The reader is led through the history of the disease into aspects of epidemiology, pathogenesis and host specificity, diagnosis, vaccination and concludes with outbreak prevention and management. Generally the coverage of the topic is excellent, but what is perhaps lacking is a review of basic influenza A virus biology, detailing the mechanisms of replication and infection.

Readers should also note that in contrast to what is presented in the first paper on the history of the disease, there have in fact been 2 recent outbreaks of HPNAI in South Africa: the 2004 Eastern Cape HPNAI H5N2 outbreak in ostriches and a second outbreak of HPNAI H5N2 in ostriches in the Western Cape in 2006. Although sound molecular evidence has been published to support the notion that the 2 outbreaks were completely unrelated, it remains a long-standing point of contention between the author of this review and the authors of the paper on the history of highly pathogenic avian influenza. Nevertheless, this book would be a valuable resource to veterinary practitioners, scientists and students either as an introduction or to those wishing to deepen their knowledge in particular aspects of the disease and its agent.

C Abolnik

ARC-Onderstepoort Veterinary Institute, Pretoria
E-mail: abolnik@arc.agric.za