

## The First Report of Intracranial Meningioma in a Donkey

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**Abstract:** An intracranial meningioma was diagnosed in a 6-year-old male donkey. At necropsy, the tumor was found in longitudinal fissure between cerebral hemispheres and easily removed from the brain. Grossly, the mass was 12×4×6 mm, well defined, smooth, lenticular shape, firm and gray-white. In one pole, the mass color was red-brown. On the cut surface, the mass had solid appearance. Histopathological examination of the mass revealed meningothelial cells around a central vascular core and perivascular cell free zone. The neoplastic meningothelial cells had elongate or round nuclei and abundant cytoplasm with indistinct borders. According to macroscopic and microscopic features, the mass was diagnosed as papillary meningioma.

**Key words:** Intracranial meningioma, gross pathology, histopathology, papillary meningioma, donkey

### INTRODUCTION

Meningiomas are a common neoplasm of the central nervous system and arise from the arachnoid cells (also termed meningothelial cells, meningocytes, or meningoblasts) located within arachnoid villi (Barnhart *et al.*, 2002). Meningiomas of intracranial and extracranial origin have been reported in humans, dogs, cats, horses, sheep and rarely, cattle (Zimmerman *et al.*, 2000). The intracranial forms have been described more frequently in dogs and cats among domestic animals (Koestner and Higgins, 2002; Suzuki *et al.*, 2002).

To our knowledge, there is no report about occurrence of meningioma in donkey and in this report, we describe gross and histopathological features of meningioma in the affected animal.

### MATERIALS AND METHODS

A 6-year-old male and healthy donkey was necropsied for education of standard necropsy procedure in equidae at necropsy hall, Veterinary Faculty, Shahrekord University. After expulsion of brain, a mass was found in longitudinal fissure between cerebral hemispheres. For histopathological examination, the mass was fixed in 10% neutral buffered formalin. They were processed and embedded in paraffin. Sections of 5 µm thickness were cut and stained with haematoxylin and eosin.

### RESULTS

After expulsion of brain, a mass was found in longitudinal fissure between cerebral hemispheres and easily removed from the brain. Grossly, the mass was 12×4×6 mm, well defined, smooth, lenticular shape, firm and gray-white. In one pole, the mass color was red-brown. On the cut surface, the mass had solid appearance.

Histopathological examination of the mass revealed meningothelial cells around a central vascular core and perivascular cell free zone. The neoplastic meningothelial cells had elongate or round nuclei and abundant cytoplasm with indistinct borders.

According to macroscopic and microscopic features, the mass was diagnosed as papillary meningioma.

### DISCUSSION

In this study, meningioma was found in falx cerebri (a fold of dura mater in the longitudinal fissure, which separates the two cerebral hemispheres). The development site of meningioma includes the falx cerebri, convexity, tentorium cerebelli and cerebral ventricle and in dogs, the anterior cranial fossa such as the falx cerebri and convexity is a common site of development, but there are few reports of other development sites (Kitagawa *et al.*, 2004). In this case, the tumor mass had lenticular shape. Meningiomas are variable in shape that include spherical, lobulated, lenticular and plaque-like (Storts and Montgomery, 2001).

Meningioma is a tumor showing a variety of histological characters (Maeda *et al.*, 2005). In this study, the histological subtype of meningioma was papillary. The other recorded subtypes include meningothelial, fibroblastic, psammomatous, transitional, angiomatous, microcystic, myxoid, granular cell and atypical (Patnaik *et al.*, 1986; Koestner and Higgins, 2002; Suzuki *et al.*, 2002). The most of meningiomas exhibit areas of more than one histological subtype (Koestner and Higgins, 2002). The biological behavior of histologic variants is almost similar except anaplastic, atypical or malignant meningioma, that develops less commonly in dogs (Maeda *et al.*, 2005). Among subtypes of canine meningioma, meningothelial, fibrous and transitional types are frequently encountered but other types are rare (Suzuki *et al.*, 2002).

In general, treatment of dogs and cats with primary brain tumors is composed of supportive and definitive therapy. Supportive therapy consists of corticosteroids and/or anticonvulsants. Definitive therapy may consist of surgical removal, chemotherapy, radiation therapy or a combination of two or more methods (Jung *et al.*, 2006). Use of radiation therapy as a supplement to tumor resection can significantly extend life expectancy in dogs with intracranial meningiomas (Axlund *et al.*, 2002).

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