

Iridociliary Epithelial Tumor in a Cat

Shunta ITO^{1,4)}, Youka NARASAKI²⁾, Yasuhiro NAKANO²⁾, Takeo MINAMI^{2,3)},
Nobuyuki KANEMAKI¹⁾*

1)Azabu University, 1-17-71, Huchinobe, Chuou-ku, Sagamihara-shi, Kanagawa 252-5201, Japan

2)Hist. Vet. Inc., 22-9-F2, Sakae-cho, Kanagawa-ku, Yokohama-shi, Kanagawa 221-0052, Japan

3)Bayside Animal Clinic, 22-9-F1, Sakae-cho, Kanagawa-ku, Yokohama-shi, Kanagawa 221-0052, Japan

4)Doubutunomori General Animal Hospital, 2-67-12, Hagoromo-cho, Tachikawa-shi, Tokyo 190-0021, Japan

*Correspondence to: Nobuyuki Kanemaki, Azabu University, 1-17-71, Huchinobe, Chuou-ku, Sagamihara-shi, Kanagawa 252-5201, Japan
e-mail: kanemaki@azabu-u.ac.jp

Summary

A 15-year-old female spayed domestic short-hair cat was referred for a non-pigmented mass within the pupil of the left eye. In the ophthalmic examination, the non-pigmented mass appeared behind the iris. Visual function was normal, and there were no significant clinical findings except the ciliary body mass. Seven days after presentation, the mass was removed with sclerotomy and iridocyclectomy. The mass was determined to be an iridociliary epithelial tumor upon histopathological and immunohistochemical analyses. Thirty-eight days after tumor removal, visual function was maintained, and the papillary light reflex remained normal.

Key Words: cat, iridociliary epithelial tumor, immunohistochemistry

Introduction

In the cat, tumors of the eye most often begin in the uveal tract, most commonly becoming diffuse irideal melanoma, post-traumatic ocular sarcoma, and lymphosarcoma.¹⁻⁴⁾ Primary iridociliary epithelial tumor is the next most common tumor type,^{1,2,5-7)} but still rare because the tumor originates in the ciliary epithelial cells.^{1,2)} These tumors are not aggressive and seldom develop systemic metastases.^{1,2,5-7)} Prognosis is generally good when the eye with the iridociliary epithelial tumor is enucleated before the tumor size increases. However, cases in which the tumor is extracted by iridocyclectomy have been rarely described, and the prognosis in these cases has not been established. Moreover, suitable indications for tumor extraction in the cat are not known. This report details a case of feline iridociliary epithelial tumor extracted by sector iridocyclectomy. The diagnosis was confirmed histopathologically, histochemically, and immunohistochemically, and the prognosis was also considered.

Iridociliary Epithelial Tumor in a Cat

Case

A 15-year-old female spayed domestic short-hair cat was referred to our clinic for a mass within the pupil of the left eye. At the initial medical examination, a non-pigmented mass was observed within the pupil and the blood vessels supplying the tumor were observed (Fig.1).



Fig. 1: Photograph from the first medical examination. The non-pigmented mass was observed within the pupil of the left eye. Blood vessels supplying the tumor can be seen.

Although the iris was displaced anteriorly, synechiae were not observed and iris motion remained normal. Neither red eye nor aqueous flare were observed in either eye, and both fundi appeared normal. Menace response, dazzle, and direct papillary light reflex (PLR) were present in each eye. Intraocular pressure was normal in the right eye (17 mmHg) and left eye (20 mmHg). Ocular ultrasonography did not reveal any abnormalities of the posterior segment in either eye, with the exception of the iris tumor in the left. This cat was diagnosed with an iris tumor of the left eye upon ophthalmic examination.

Seven days after initial presentation, the tumor was extracted by sclerotomy and sector iridocyclectomy (Fig. 2).

Iridociliary Epithelial Tumor in a Cat

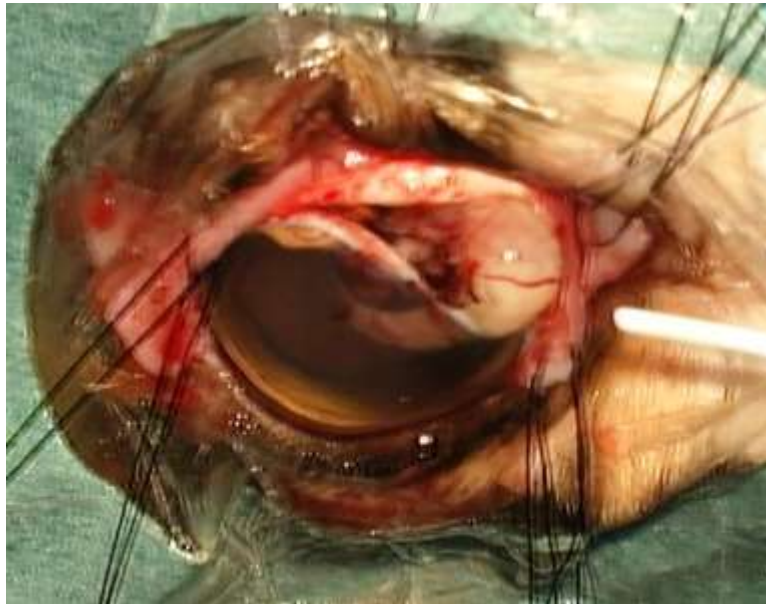


Fig. 2: Intraoperative photograph of the tumor being extracted by sclerotomy and sector iridocyclectomy.

After performing a canthotomy and controlling bleeding with electrocautery, the tumor was completely extracted macroscopically.

The extracted tumor was fixed in 10% neutral-buffered formalin and stained with hematoxylin and eosin (HE) for histopathological examination (Fig. 3).

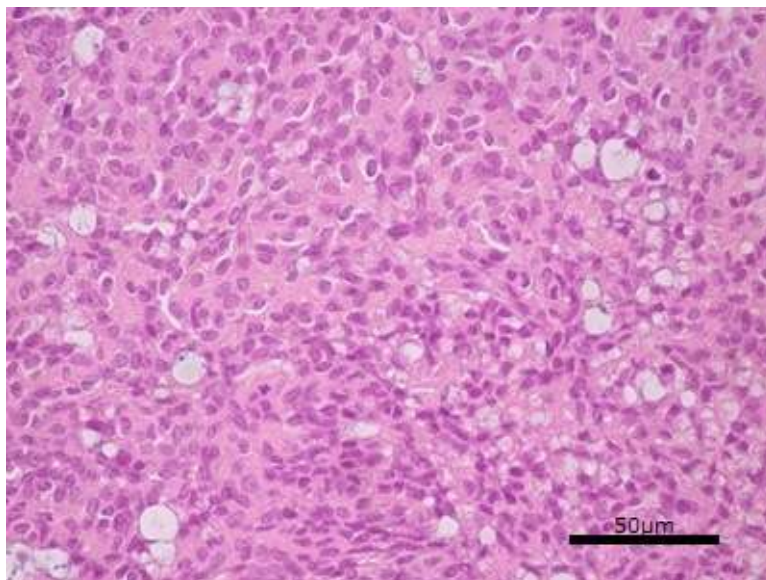


Fig. 3: Hematoxylin and eosin staining of the papillary tumor that was comprised of epithelial cells (magnification $\times 400$). Nuclear division can be seen.

This revealed papillary tumor growth and that the tumor consisted of epithelial cells. As was done previously by Grahn et al,⁵⁾ we performed histochemical and immunohistochemical analyses on the sample. The tumor was stained with periodic acid Schiff (PAS) (Fig. 4),

Iridociliary Epithelial Tumor in a Cat

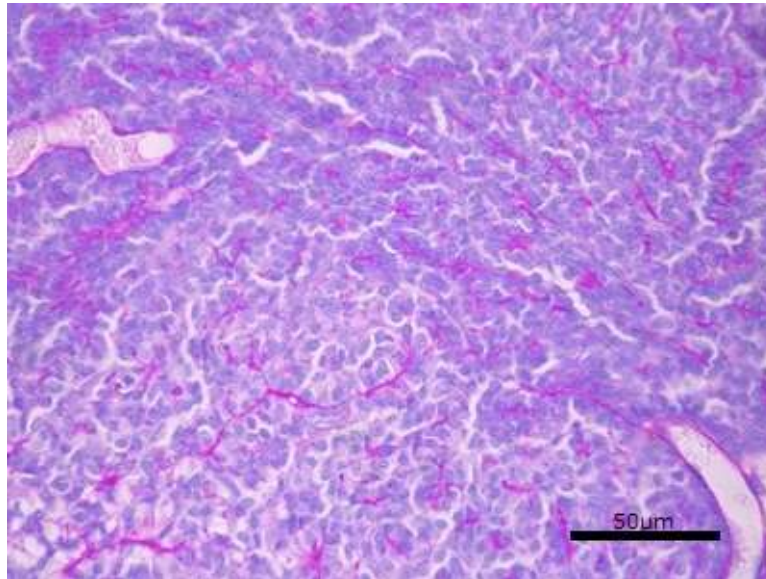


Fig. 4: The basement membrane of tumor cells stained positive for PAS (magnification $\times 400$).

cytokeratin (clone V9, mouse monoclonal antibody, Dako, mo725), vimentin (clone AE/AE3, mouse monoclonal antibody, Dako, M3515), and neurospecific enolase (NSE, rabbit polyclonal antibody, Nichirei Bioscience). The tumor basement membrane was stained with PAS (Fig. 5).

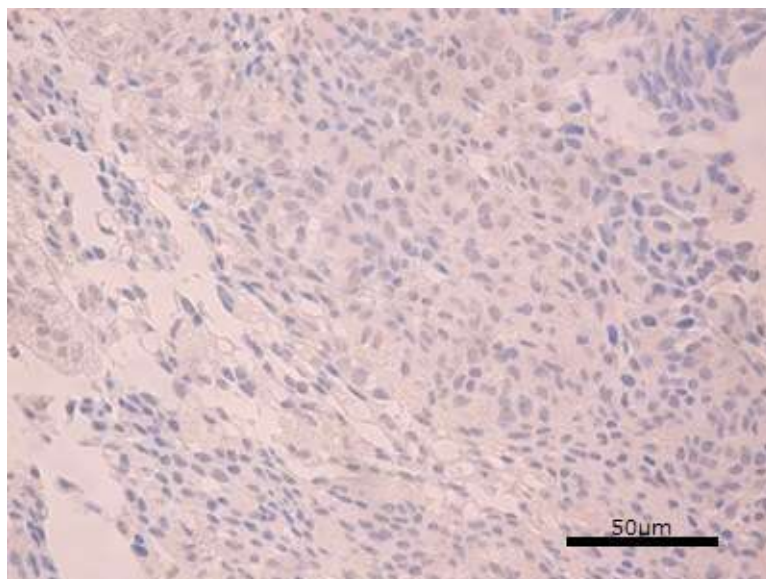


Fig. 5: Immunohistochemical staining of the tumor was negative for cytokeratin (magnification $\times 400$).

Tumor cells stained positive for vimentin and NSE and negative for cytokeratin (Fig. 6,7).

Iridociliary Epithelial Tumor in a Cat

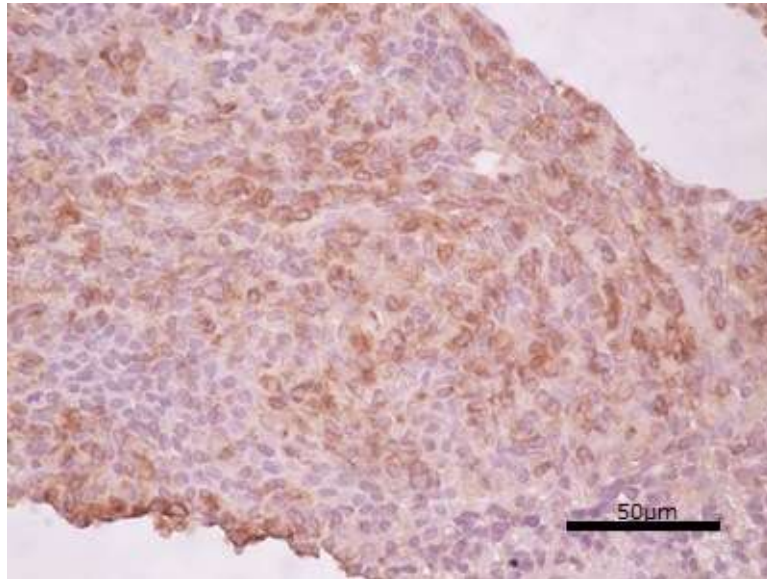


Fig. 6: Immunohistochemical staining of the tumor was positive for vimentin (magnification $\times 400$).

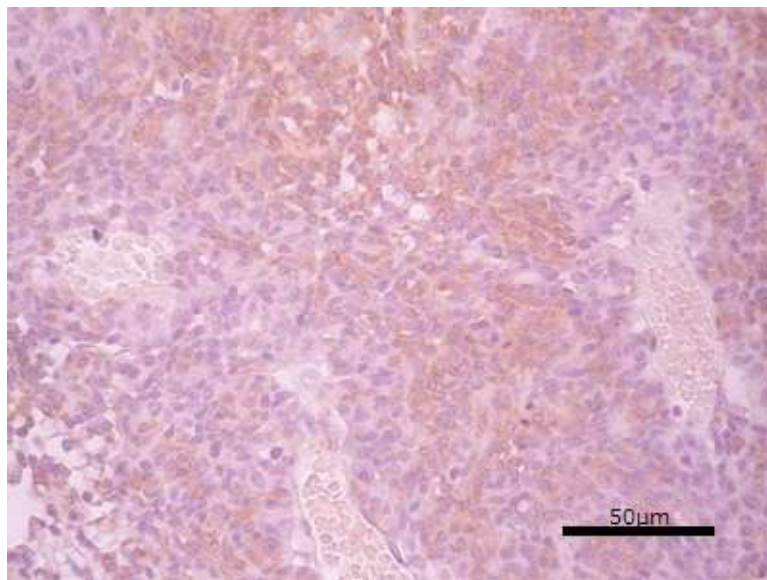


Fig. 7: Immunohistochemical staining of the tumor was positive for NSE (magnification $\times 400$).

As a result, this case was determined to be that of an iridociliary epithelial tumor.^{5,6)} Because the extracted tumor was small, we had difficulty determining whether this tumor was benign or malignant.

The eye was reexamined 38 days after the operation (Fig. 8).

Iridociliary Epithelial Tumor in a Cat



Fig. 8: Tumor regrowth cannot be seen 38 days following tumor extraction.

Tumor growth on the back of the iris was not observed, and the menace response and dazzle were still present in the left eye. The direct PLR was normal, except where part of the iris had been removed.

Discussion

Here, we diagnosed a feline ocular tumor as iridociliary epithelium type using very small amounts of extracted tumor tissue. Visual function was maintained in the animal during the entire postoperative follow-up period (38 days).

When using extracted intraocular tumor to diagnose a patient, it is insufficient to only perform a histological examination with HE staining. In many cases, we have not been able to obtain sufficient tumor material of high enough quality for diagnosis. Therefore, we suggest that a more definitive diagnosis can be made by using histochemical and immunohistochemical staining. Grahn and his colleagues have succeeded in systemically classifying feline ocular tumors in 75 enucleated eyes using histological finding, PAS staining, and immunohistochemical staining.⁵⁾ We were also able to use these techniques in this rare case to make a definitive diagnosis.^{5,6,8-10)}

Because the extracted tumor was small, we could not determine if the tumor was benign or malignant. This information is very important for predicting the prognosis in future cases. However, as for the iridociliary epithelial tumor, it has been reported that neither iridociliary adenomas nor adenocarcinomas are likely to metastasize.^{1,5,6)} Therefore, we are hopeful that the cat will continue to do well and that a local recurrence will not occur, as can sometimes happen following tumor extraction.¹⁾ The cat will continue to be followed to monitor progress. In conclusion, the short-term prognosis in this case of iridociliary epithelial tumor extracted by sector iridocyclectomy was good.

References

1. Gelatt K. N.: Veterinary ophthalmology Blackwell Publishing , 2007, pp.1124-1127.
2. Dubielzig R. R.: Ocular neoplasia in small animals. The Veterinary Clinics of North America 1990, 20, 1633-1638.
3. Zeiss C. J., Johnson E. M., Dubielzig R. R.: Feline intraocular tumors may arise from transformation of lens epithelium. Veterinary Pathology, 2003, 40, 355-352.
4. Dubielzig R. R., Everitt J., Shaddock J. A. *et al.*: Clinical and morphologic features of post-traumatic ocular sarcomas in cats. Veterinary Pathology 1990, 27, 62-65.
5. Grahn B. H., Peiffer R. L., Cullen C. L., *et al.*: Classification of feline intraocular neoplasms based on morphology, histochemical staining, and immunohistochemical labeling. Veterinary Ophthalmology, 2006, 9(6), 395-403.
6. Dubielzig R. R., Steiberg H., Garvin H. *et al.*: Iridociliary epithelial tumors in 100 dogs and 17 cats: a morphological study. Veterinary Ophthalmology, 1998, 1, 223-231.
7. Peiffer R. L., Jr.: Ciliary body epithelial tumours in the dog and cat; a report of thirteen cases. Journal of small Animal Practice, 1983, 24, 347-370.
8. Evans P. M., Lynch G. L., Dubielzig R. R.: Anterior uveal spindle cell tumor in a cat. Veterinary Ophthalmology, 2010, 13, 387-390.
9. Labelle P., Holmberg B.J.: Ocular myxoid leiomyosarcoma in a cat. Veterinary Ophthalmology, 2010, 13, 58-62.
10. Michau T. M., Proulx D. R., Rushton S. D. *et al.*: Intraocular extramedullary plasmacytoma in a cat. Veterinary Ophthalmology, 2003, 6, 177-181.