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Feline Diffuse Iris Melanoma in a Cat

Taek-Jin Nam, Seon-Mi Kang, Sang-Wan Park, Ji-Yoon Kwak, Eun-Jin Park, Jae-Gook Lim, Seo-Woo Jeong and Kangmoon Seo[1]

Department of Veterinary Clinical Sciences, College of Veterinary Medicine, Seoul National University, Seoul 08826, Korea

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Abstract : A 4-year-old spayed female British shorthair cat was referred for abnormal pigmentation on the right iris. The pigmentation was mainly located in the medial portion of the iris. No abnormalities except iris were detected in a full ophthalmic examination. There was no evidence of metastasis after thoracic radiography and abdominal sonography. Enucleation was performed on the right eye and it was sent for a histopathological evaluation. It was confirmed as early stage of feline diffuse iris melanoma (FDIM) with involvement of iris stroma.

Key words **:** feline diffuse iris melanoma, enucleation, cat.

Introduction

The most common primary intraocular neoplasm in cats is malignant melanoma of the anterior uvea (1,2,3,7,8). Feline diffuse iris melanoma (FDIM) is the most common type of melanoma in cats (2,3,7,8). FDIM is typically unilateral and affects middle aged to older cats (1,4,7). It is known that there is no significant relationship between FDIM and gender or breed (4). The most important clinical sign is a flat, hyperpigmented foci on the anterior iris surface (4,10). Hyperpigmented lesions are progressively enlarged or increased in number or both. If there is infiltration of neoplastic cells in the larger portions of the iris, ciliary body, iridocorneal angle and sclera, uveitis and glaucoma could occur (1,4,5,10). These hyperpigmented lesions of the iris may continue for months or years (1,3). It has been reported that there is a possibility that metastasis will be occurred in other organs when FDIM progresses (3,5).

This study presented a case with early diagnosis and treatment to prolong the survival time.

Case

A 4-year-old spayed female British shorthair was referred for iris hyperpigmentation in the right eye (OD). The owner reported that a hyperpigmented lesion on the dorsotemporal iris surface had been enlarged and increased in number progressively (Fig 1).

Full ophthalmic examinations were performed. The results of the neuro-ophthalmic examinations, including menace response, dazzle reflex, pupillary light reflex, corenal reflex and conjugated eye movement, were shown normal. Tear production (Schirmer tear test®; Intervet, Summit, NJ, USA) and intraocular pressure (Tonovet®; Icare Oy, Vantaa, Finland) were within normal limits. In slit lamp biomicroscopy, multifocal hyperpigmented lesions of the iris in OD were observed and other ocular abnormalities were not found except focal cataracts in both eyes (OU). Indirect ophthalmoscopy showed normal fundus in OU. There was no evidence of metastasis after thoracic radiography, abdominal radiography and abdominal sonography. However, according to the clinical features, FDIM was highly suggested and enucleation was scheduled to prevent metastasis and to prolong survival time.

In histopathologic examination, the early stages of feline diffuse iris melanoma was confirmed. There was a hyperpigmented neoplastic population of cells carpeting the anterior iris surface, infiltrating a short distance in the anterior iris stroma (Fig 2). The cells presented variably pigmented cytoplasm with indistinct cell borders, and round to fusiform nuclei with finely stippled chromatin and indistinct nucleoli.

Two weeks after surgery, it was observed that the surgical site had healed well and there were no additional problems for a period of 24 months.

Discussion

Feline diffuse iris melanoma (FDIM) is the most common uveal tumor found in cats (3,4,6). In general, although the features of FDIM are locally infiltrative, it is well known that this tumor shows high metastatic rates (24-63%) to distant organs including the liver, lungs, spleen, bone and lymph nodes (2,4,6,7,8,10). Initially, hyperpigmentation of the anterior iris surface begins as single or multifocal and increases in number and size or both (2). As the disease progresses, the hyperpigmented lesion will extend to the anterior uvea but rarely affect the choroid (8). If there is infiltration of the iridocorneal angle, secondary glaucoma could develop due to the obstruction of the drainage angle (3,7,9,10). In previous studies, it was shown that if the tumor spreaded beyond the iris, the rate of metastasis could reach 62.5% (1). A metasta-

[1]Corresponding author.
E-mail : kmseo@snu.ac.kr

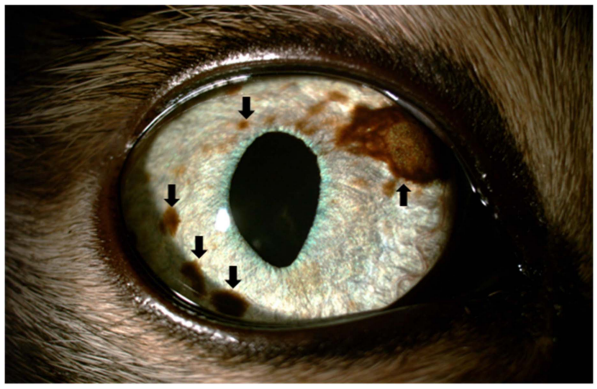

Fig 1. Photograph of the right eye. There were multifocal hyperpigmented lesions on the iris surface (arrows).

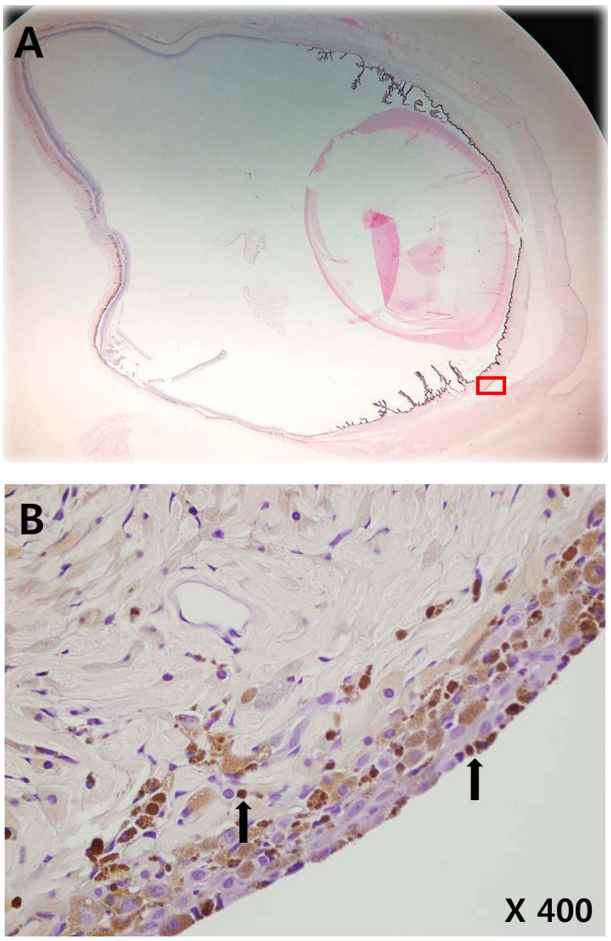

Fig 2. Histological photograph of the right eye (A). Magnifying photograph of the area of box in A, × 400 (B). There were hyperpigmented neoplastic cells (arrows) on the anterior surface and neoplastic infiltrations into the iris stroma.

sis tumor that spreads to other organs will be fatal (4).

FDIM could be classified histologically into three stages according to the degree of neoplastic infiltration: early, moderate and advanced stage. In the early stage, the tumor is confined to the iris and trabecular meshwork. In the moderate stage, the tumor extends to the rostral ciliary body but not the sclera. In the advanced stage, the tumor exists not only in the iris and rostral ciliary body, but also spreads to the sclera (3).

According to the previous studies, the degree of infiltration and occurrence of glaucoma were particularly relevant to the survival rates of affected cats. If pigmented cells were confined to the iris stroma and trabecular meshwork (early stage), the survival rates was 65% which tend to be close to those of cats undergoing enucleation due to lymphoplasmacytic uveitis, ocular trauma and endophthalmitis (3,10). As FDIM progresses, pigmented cells extend to the ciliary body or the sclera, and the length of survival time would be shortened. In addition, if secondary glaucoma occurs, the life expectation of the cat tends to be shortened and it has been reported that the median survival time of cats undergoing enucleation in the advanced stage was approximately 1.5 years (3,6). The only way to definitely diagnose FDIM is through a histopathological evaluation, which requires enucleation (2,3,4). However, it is very difficult to differentiate between FDIM and benign iris melanosis due to similar clinical features (4).

In this case, the clinical behavior of the hyperpigmented lesion suggested the potential of malignancy. Even though the patient had normal vision on the affected eye, enucleation was performed to prevent metastasis and prolong survival time (6). The early stage of FDIM was confirmed by the histopathological evaluation and this cat alived in a healthy state for about two years.

There are other methods available for the treatment of iris melanoma including iridectomy and laser photocoagulation (1). Although iridectomy also allows a histopathological examination, it might induce intraocular hemorrhage and increase the possibility of incomplete excision of mass and metastasis (1). While the newly introduced laser photocoagulation technique could ablate the focal pigmented lesion to preserve the vision and the eye, it has the disadvantage of risking seeding of neoplastic cells and collateral damage to the cornea (1,6). On the other hand, enucleation and exenteration have advantages in possible histopathological examination and the complete removal of the tumor.

Since systemic metastasis, as well as ocular complications including secondary glaucoma, could develop over time, early enucleation was performed for a better prognosis in the present case.

Conclusion

This case showed abnormal pigmentation in the medial portion of the right iris. It was confirmed feline diffuse iris melanoma (FDIM) by histopathological examination after enucleation. There were no metastasis and additional problems for a period of 2 years. It is recommended that enucleation is performed at an early stage of the disease for a better prognosis.

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