Bowenoid in situ carcinoma in cats: CO2 laser treatment

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For The Education Center

B Bowenoid in situ carcinoma (BISC), also known as multicentric Bowenoid papulosis, is an uncommon premalignant neoplasm histologically similar to Bowen’s disease in humans. 1 BISC lesions are marked by circumscribed epidermal and follicular hyperplasia with hyperkeratosis and full-thickness epidermal dysplasia. 2

3 BISC is believed to be unrelated to sun exposure. Papillomavirus (PV) antigen has been found in 45 to 47 percent of affected cats, although the exact role of PV in BISC pathogenesis is uncertain. 3 Moreover, concurrent Demodex infestation has been reported (possibly due to an immune response). 4

Typically, BISC most commonly affects thick-haired areas on the head, neck, dorsal thorax, ventrum, and legs. 5 BISC lesions are normally multiple and characterized by irregularly shaped, raised, and crusted plaques with peripheral pigment line. Lesions are superficial and confined to the epidermis. Chronic lesions may become ulcerated. Early lesions are so minimally keratinized that they do not present an obvious problem.

The most diagnostic features of BISC is made through biopsy and histopathology examination. With prompt appropriate treatment, this neoplasm is unlikely to spread to other organs of the body. Therefore it is critical to properly diagnose and detect BISC early.

The full extent of the lesions caused by this disease is not apparent until the patient’s hair is clipped. The more severe lesions can be felt as crusts or raised scales, but the full extent of the crusts and the associated secondary bacterial infection are not discernible due to the thick hair coat. Therefore, shaving the cat in preparation for biopsy is required to avoid missing early, mild lesions.

CO2 laser, other treatment modalities

Topical treatment with imiquimod cream is used in humans for Bowen’s disease. In cats, however, in the thick hair coat and the lesions are less extensive. Application of imiquimod cream to the hair follicle provides a complete regrowth of hair follicles and the treatment resulted in metastatic squamous cell carcinoma in situ (this patient had numerous large lesions, so this could not be done).

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The lesion was “painted” with the laser at 25 W SuperPulse repeat mode (29 Hz, 25 msec). 4C: Carbonization was removed with saline- and water-soaked gauze pads (Figures 4E and 4F). Ablation was completed once the lesion pigment was completely gone. With occasional ulcereated lesions, minor bleeding is noted. Ablation is typically done with a steady hand and easily controlled with the laser energy. The laser settings typically are changed during the procedure based on the depth of the lesion. In the early stages of ablation, the lesions are hard, dry, flat and treatment required higher power. When the ablation is down close to normal skin, the power is decreased so that only a few colouls are removed with each laser pass. These lasers are all surrounded by pigment, which is the guide to how deep the surgeon needs to go. When the pigment is gone, the clinician has gone deep enough to avoid missing early, mild lesions.

The time for surgery usually depends on the full extent of the disease. In this cat, the lesion was extensive and involved the entire trunk, legs, and head. The surgical time was 90 minutes. Sutures were not required at any point. In general, some cats can have one or more lesions that have been treated previously, but no other lesions require at any point. In general, some cats have more than one or more lesions that have been treated previously, but no other lesions require at any point. In general, some cats have more than one or more lesions that have been treated previously, but no other lesions require at any point. In general, some cats have more than one or more lesions that have been treated previously, but no other lesions require at any point. In general, some cats have more than one or more lesions that have been treated previously, but no other lesions require at any point. In general, some cats have more than one or more lesions that have been treated previously, but no other lesions require at any point. In general, some cats have more than one or more lesions that have been treated previously, but no other lesions require at any point. In general, some cats have more than one or more lesions that have been treated previously, but no other lesions require at any point. In general, some cats have more than one or more lesions that have been treated previously, but no other lesions require at any point. In general, some cats have more than one or more lesions that have been treated previous...
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ull blown in situ carcinoma (BISC), also known as multicentric squamous cell carcinoma (MSCC) or multicentric squamous cell carcinoma of the skin, is an uncommon premalignant neoplasm histologically similar to Bowen’s disease in humans.1 2 BISC lesions are marked by epidermal and follicular hyperplasia with hyperkeratosis and full-thickness epidermal dysplasia.3 4 BISC is believed to be unrelated to sun exposure. Papillomavirus (PV) antigen has been found in 43 to 47 percent of affected cats, although the exact role of PV in BISC pathology is unknown.5 6 Moreover, concurrent Demodex infestation has been reported (possibly due to his personal immune system).7 8

Typically, BISC most commonly affects thick-haired areas on the head, neck, dorsal thorax, ventrum, and legs.9 BISC lesions are normally multiple and characterized by irregularly shaped, scaled, and crusted plaques with peripheral pigmentation. Lesions are superficial and confined to the epidermis. Affected cats are usually older. Removal of these lesions in the later years of their life and prevents the development of squamous cell carcinomas, which can be severe and fatal to the cat.

Patient

A nine-year-old domestic short-haired cat was examined by the veterinarian. The cat had a pre-existing diagnosis of disseminated Demodex infestation, in places ectoparasitic, hyperpigmented papules were observed on the hind limbs, and perinaudal area. (Figures 1A, 1B and 3C, and 3D) The cat skin was clear with lesions (likely papules) clearly visible. Histopathological findings confirmed the diagnosis of BISC.

Anesthesia

The patient was premedicated with butorphanol. Propofol IV was given to induce general anesthesia. The patient was maintained with isoflurane in oxygen via endotracheal tube.

Laser equipment, settings

The following laser settings were used: 20 percent duty cycle, 25 W SP repeat mode F1-2 (20 Hz, 10 msec), 72.5 percent pulse duration in the keratinized coat and the lesions are less extensive. Application of imiquimod cream to the hairless skin of cats is impractical. Imiquimod cream does not clear the lesions in the cat, thus allowing the disease to progress into squamous cell carcinoma—a very different disease. Lesions were created, in places ectoparasitic, hyperpigmented papules were observed on the hind limbs, and perinaudal area. (Figures 1A, 1B and 3C, and 3D) The cat skin was clear with lesions (likely papules) clearly visible. Histopathological findings confirmed the diagnosis of BISC.

Ablation nozzle allows covering large areas during the initial procedure. The usual case is more advanced when first seen, as often, the owners are not told that laser ablation is not an option and the lesion is removed. However, the level of how much better laser ablation is compared to topical imiquimod cream they return sometime to have their lesions removed. Ablated lesions are significantly less extensive than with imiquimod only. 4H: Laser ablation was complete once the lesion was completely gone. With occasional ulcerated lesions, tumor bleaching is the primary method of treatment and easily controlled with the laser energy. The laser settings typically are changed during the procedure, depending on the extent of ablation, the lesions are hard, dry, blebs and treatment requires higher power when the ablation is down. The lesion is marked close to normal skin, the power is decreased so that only a few cell layers are removed with each laser pass. These lesions are all surrounded by pigment, which is the guide to how deep the surgeon needs to go. When the pigment is gone, the clinician has gone as deep as possible. During this procedure, a skin tag was located in the perinaudal area and was removed to improve the cosmetic outcome of the skin care.

Summary

Although BISC remains in the outer layers of the epidermis, it will invade if not removed.10 11 CO2 laser ablation is the cancer early while it is still along the basement membrane and removal leaves the underlying normal epidermis uninvolved. Larger high-power pulsed settings in the keratinized regions of the lesions is recommended to avoid missing early, mild lesions. If one focuses on only the crusted or ulcerated lesions, the majority of the lesions will be missed. Unfortunately, many people are advised to use this cream or just leave the lesions alone, as there is no other treatment available. Laser ablation is not the treatment of choice for BISC. However, in the author’s opinion, it is typically a noninvasive, effective treatment modality.

Postoperative care

Top-of-cats consists of pan meds for the first one to two weeks as needed. Most do not need pain medications after three days, however, some do exhibit pain behavior and pain control can be continued. Robenecan (Onurex) is used for the first three days of necessity, can be used longer if needed. No other medications are needed in the immediate post-operative period. However, topical lesions and healing may be required. It typically takes two to three weeks for the skin to heal and the cosmetic result is excellent.

REFERENCES