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A case of managing a palpebral conjunctival pyogenic granuloma.

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Abstract

Conjunctival pyogenic granuloma (CPG) represents a vascular proliferation of immature capillaries of the conjunctiva. Tumors of the conjunctiva cover a large spectrum of conditions ranging from benign lesions to site-threatening malignancies. Recognition and proper management of a CPG requires an understanding of its etiology and knowledge of tumor management. This case will outline CPG and associated management.

Keywords: *Pyogenic granuloma, Conjunctival tumors, Palpebral Conjunctiva, Eyelid, Conjunctival lesions.*

Introduction

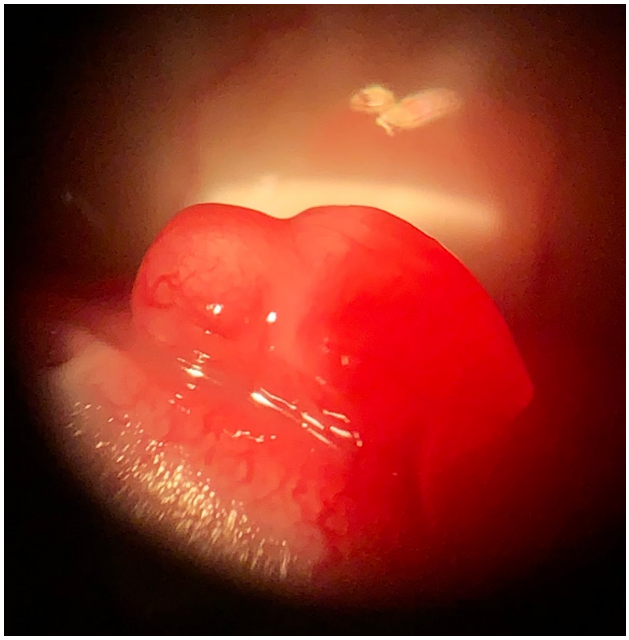
CPG can pose a diagnostic dilemma for optometrists. The distinction between a benign proliferating lesion versus a malignant lesion can be blurred. CPG is less serious, benign and typically not sight-threatening. On the other hand, other lesions that present similarly can have sight-threatening consequences. Therefore, correct recognition and diagnosis is important for optimal outcomes.

Case Report

A 51-year old caucasian male presented with complaints of red lesion along the inside of his lower left eyelid. The lesion has rapidly grown in size and started one week ago. No foreign body sensation, changes in vision or discharge were reported. The patient's last eye exam was 1 year and 5 months ago. Ocular history and family ocular history were unremarkable and no contact lens history exists. No medications or drug allergies were reported. Blood pressure was not measured. The patient was oriented to time, place and person. Habitual spectacle correction measured via lensometry was -3.25 DS OD, -2.75-1.00x005 OS with a +1.25 add. His corrected distance visual acuity was 20/20 in OD and 20/20 OS.

Non-contact tonometry measured 15mmHg OD, 15mmHg OS at 3:25pm. Anterior segment evaluation was performed using a slit lamp biomicroscope. The adnexae, lids, puncta, bulbar conjunctiva, cornea, iris and lens were normal in both eyes. The eyelashes of both eyes presented with moderate blepharitis. The right palpebral conjunctiva was normal, however, the left lower palpebral conjunctiva revealed an elevated, red, pedunculated lesion approximately 2.0mm in width, 1.0mm in length and 1.5mm in height. The conjunctival mass was easily mobile and transillumination of the lesion was not performed. The patient denied a history of chronic sun exposure. The lesion was near the lid margin. Anterior chamber of both eyes were quiet without evidence of cell or flare and angles were 4/4 via the Van Herick method. Pupils were equally round and reactive to light, no afferent pupil defect was noted OU. No pupil dilation was performed. Posterior segment evaluation was performed using a slit lamp biomicroscopy with a 90D lens. Fundus assessment revealed optic nerves with a cup-to-disc ratio of 0.20/0.20 OD and OS. The cups were shallow; there was no evidence of pallor or edema or the neuroretinal rim. Both macula's were flat and evenly pigmented. The vitreous was clear and the vasculature was normal in both eyes. Retinal periphery evaluation was not performed.

Figure 1 (Initial presentation)



The differential diagnoses considered at this point included:

- Kaposi's sarcoma of the conjunctiva (KPC)
- Ocular basal cell carcinoma (OBCC)
- Conjunctival squamous cell carcinoma (CSCC)
- Congenital conjunctival haemangioma (CCH)
- Conjunctival pyogenic granuloma (CPG)
- Conjunctival malignant melanoma (CMM)
- Conjunctival papilloma (CP)
- Conjunctival intraepithelial neoplasia (CIN)

KPC of the conjunctiva is a rare malignant tumor of the endothelium. Lesions present as a purple-red to bright-red in color and are highly vascular with surrounding telangiectatic vessels. Lesions can range in size and can remain unchanged for months to years or grow rapidly within a few weeks and spread. Lesions can appear as a bright-red fleshy nodular, plaque-like or macular-shaped mass; often seen in the fornix. Commonly found in patients with AIDS or are immunocompromised. Ophthalmic manifestations typically involve the eyelid and conjunctiva. Patients can present with complaints of redness, pain, irritation, foreign body sensation, epiphora, mucous discharge, distortion of normal eyelid margin, swollen lid or visual obstruction.

OBCC is a malignant eyelid tumor presenting commonly on the lower eyelid of middle-aged or elderly patients. Originating from basal cells of the epidermis, it is characterized with pearly borders, telangiectatic vessels and pink in color. Patients can present with eyelid ulceration, bleeding, madarosis and distortion of normal eyelid margin. Although a slow-growing tumor, a known risk factor is chronic sun exposure. Patients can be asymptomatic or present with epiphora. Vision is typically not affected.

CSCC is a malignant eyelid tumor commonly present in the interpalpebral fissure of older caucasian patients. This tumor arises from basal cells of the epidermis and can appear as a white or yellow-pink nodule within the conjunctiva, but they can extend into the peripheral cornea. Large feeder vessels can be present. Similar to basal cell carcinoma, a known risk factor is sun exposure. This lesion commonly presents unilaterally and visual acuity often is unaffected in the early stages. Patients may be asymptomatic or present with symptoms of redness, irritation, itching, pain, tearing, sensitivity to light and foreign body sensation.

CCH is a benign rapidly growing tumor of childhood that typically presents in infancy. Most cases are congenital, asymptomatic and affect females more than males. This tumor arises from endothelial proliferation. Lesions are rounded and nodular in shape and bright red in color. These have potential to reach enormous size and cause vision impairment. Intervention is typically warranted if the lesion is extensive. Spontaneous bleeding can occur.

CPG is a benign inflammatory lesion that presents as a red, smooth, pedunculated and vascular mass that affects cutaneous or mucosal membranes. These lesions occur in response to minor trauma to the conjunctiva; such as provoking tissue insult from trauma or surgery. Less commonly, they can occur idiopathically. They can rapidly grow in size and are prone to bleeding. The eye is mostly white and quiet. They are not malignant in nature and typically present unilaterally. Patients may complain of irritation and foreign body sensation. Vision is typically not affected.

CMM is a rare cancerous growth of the eye. Typically presents as a painless, thickened, raised lesion with prominent feeder vessels. Typically these lesions have some degree of pigmentation but amelanotic CMM can occur. CMM typically presents in adulthood and are usually unilateral. They are more commonly located on the bulbar conjunctiva and limbus but may present in the palpebral conjunctiva. They are also associated with a risk in mortality due their malignancy potential. Vision typically is not affected.

CP typically is a benign conjunctival epithelial tumor with minimal propensity toward malignancy. Lesions typically present as a finger-like or cauliflower-like appearance. Lesions have a greyish-red color, a soft mass often having a pedunculated appearance and can be unilateral or bilateral. A strong association exists between human papillomavirus and the development of CP. Symptoms can range from asymptomatic to chronically irritated red eyes. Vision is typically not affected.

CIN is a slow growing, elevated, gelatinous conjunctival malignancy. It is locally invasive, has well-defined borders and appears to be fleshy mass with some degree of feeder vasculature. The lesion is typically limited to the epithelial layer but if it becomes more invasive it can break through the layers below and have severe complications; with low risk of metastasis. Patients symptoms may range from being asymptomatic to redness and foreign body sensation. Vision is typically not affected.

The appearance of the conjunctival lesion in the left eye suggests a diagnosis of a CPG based on the following; the presence of a smooth, red, rapidly-growing, pedunculated lesion within the palpebral conjunctiva. In addition, the eyelid architecture was normal, no madarosis, no discharge and no feeder vessels were present. ~~In addition, the lesion residing within the superficial conjunctiva, there was no involvement of the layers below.~~ In addition, the patient's medical history was unremarkable and the timing of onset was in adulthood. The patient was prescribed Timolol Gel 0.5% QAM in the left eye and advised to start Ocusoft lid wipes BID OU. The patient was scheduled to return for follow up in 2 days.

Follow up #1

The patient returned in 2 days for an anterior segment evaluation. The patient reported good compliance with Timolol in the left eye and lid wipes in both eyes. The patient had no visual complaints and denied side effects from Timolol use. Visual acuity remained stable with corrected distance acuity of 20/20 OD and 20/20 OS. Slit lamp biomicroscopy of both eyes revealed normal lids, bulbar conjunctiva, cornea and irides. Mild blepharitis was present bilaterally but the palpebral conjunctiva of the right eye was normal. The pyogenic granuloma within the palpebral conjunctiva of the left eye showed reduction in size, approximately 20% from baseline. No AC reaction was present OU. Non-contact tonometry measured 15 mmHg OD, 13 mmHg OS at 12:30pm. Posterior segment evaluation was deferred in both eyes. The patient was advised to continue Timolol QAM OS and lids scrubs BID OU. The patient was scheduled to return for follow-up in 1 week.

Follow up #2

The patient returned in 1 week for an anterior segment evaluation. The patient reported good compliance with Timolol in the left eye and lid wipes in both eyes. The patient had no visual complaints and denied side effects from Timolol use. Visual acuity remained stable with corrected distance acuity of 20/20 OD and 20/20 OS. Slit lamp biomicroscopy of both eyes revealed normal lids, bulbar conjunctiva, cornea and irides. Trace blepharitis was present bilaterally but the palpebral conjunctiva of the right eye was normal. The pyogenic granuloma within the palpebral conjunctiva of the left eye showed moderate reduction in size, approximately 70% from baseline. Non-contact tonometry measured 15 mmHg OD, 12 mmHg OS at 3:45pm. Posterior segment evaluation was deferred in both eyes. The patient was advised to continue Timolol QAM OS and continue lids scrubs BID OU. The patient was scheduled to return for follow-up in 2 weeks.

Follow up #3

The patient returned in 2 weeks for an anterior segment evaluation. The patient reported good compliance with Timolol in the left eye and lid wipes in both eyes. The patient had no visual complaints and denied side effects from Timolol use. Visual acuity remained stable with

corrected distance acuity of 20/20 OD and 20/20 OS. Slit lamp biomicroscopy of both eyes revealed normal lids, bulbar conjunctiva, cornea and irides. Trace blepharitis was still present bilaterally but the palpebral conjunctiva of the right eye was normal. The pyogenic granuloma within the palpebral conjunctiva of the left eye had fully resolved. No AC reaction was present OU. Non-contact tonometry measured 15 mmHg OD, 12 mmHg OS at 1:20pm. Posterior segment evaluation was deferred in both eyes. The patient was advised to discontinue Timolol OS but continue lid scrubs QD OU for maintenance. The patient was doing well no follow up was scheduled.

Discussion

The conjunctiva of the eye provides protection and lubrication. It provides immune surveillance and prevents microbial entrance. CPG is a common, acquired, benign, vascular proliferation of the conjunctiva. Pyogenic granuloma, also known as lobular capillary hemangioma, may occur anywhere on the skin or mucosa and even intravascularly at any age (1). Depth of these lesions may be measured with ultrasound biomicroscopy, anterior segment OCT and In-vivo confocal microscopy (16). Transillumination may be helpful in determining any changes in size. The etiology of this condition is thought to be a reactive response to a variety of stimuli, such as infective organisms, penetrating injury, hormonal factors and retinoid therapy (2,5). Pyogenic granuloma typically develops at the site of preexisting injury, where it evolves rapidly over a period of weeks to a maximum size. In cases that involve the conjunctiva, chalazia are the most common stimulating factor. 42% of cases result from preexisting chalazion, 40% from ocular surgery, 5% from trauma and 13% were idiopathic (6). CPG formation has also been reported rarely secondary to ocular acne rosacea and soft contact lens wear (8.9). Due to no presence of any pre-existing stimuli, this case demonstrated an idiopathic case of CPG.

CPG typically presents as solitary, smooth, bright red, rapidly growing lesion, appearing as a papule or polyp that can often ulcerate or bleed easily. Maximal size can be achieved within a few weeks (6). Older lesions tend to become increasingly more fibrotic and continue to persist as a result (3). Majority of lesions stabilize or spontaneously involute and heal with a small focal scar (1,7). Spontaneous involution of these lesions occur often post partum or cases involving foreign bodies (1). It was this spontaneous involution of these lesions that suggested these lesions were a form of vascular hyperplasia.

Histopathologically, early lesions are identical to granulation tissue (2,5). Early lesions contain numerous capillaries and venules disposed radially towards the skin surface along with an edematous stroma. The stromal edema contains a mixture of inflammatory molecules; lymphocytes, plasma cells, scattered neutrophils and numerous small-caliber blood vessels (2,4,5). The matured CPG lesion exhibits a fibromyxoid stroma separating the lesion into a lobular pattern. Each lobule is composed of aggregations of capillaries and venules with plump endothelial cells (2,5). In matured stages, the lesion has re-epithelialized and becomes entirely covered by epidermis. Collarettes of epithelium particularly embrace the lesion at the periphery

(2,5). Inflammatory infiltration becomes more sparse and edema of the stroma begins to disappear. In late stages, fibroplasia increases steadily and lobules of capillaries become smaller and the pyogenic granuloma resolves into fibroma (5,6). Histopathologic findings are the same in all variations of pyogenic granuloma. The recurrence rate of these lesions is reported to be between 3-10% (1,6).

First-line treatment for CPG begins with using topical therapeutics. Topical timolol recently has been extremely effective at treating CPG (10,11). Both once a day dosing and twice a day dosing have been effective in literature; but no significant difference between established. In 2008, beta blockers were first discovered to be successful at treating benign vascular lesions (12). The mechanism of action is presumed to involve vasoconstriction of capillaries that are supplying the rapidly growing lesion. This leads to inhibition of pro-angiogenic growth factors and apoptosis of proliferating endothelial cells (11). The benefits of topical beta blockers include low side effect profile and non-invasive modality. The disadvantages are the same as glaucoma patients taking timolol; local burning, ptosis, headache and contraindications for patients who have asthma, COPD, sinus bradycardia, atrioventricular block, cardiac failure and cardiogenic shock. Other medications that are also very effective are topical corticosteroids (13,14). Topical steroids are effective because they have a profound impact on reducing inflammation. The patient in this case was treated with a topical beta blocker rather than a topical steroid due to the low side effect profile of beta blockers. For those who do not respond to topical medication, other therapeutic alternatives are warranted. These include surgical excision, electrodesiccation and curettage, cryotherapy or ablation with CO2 or continuous wave vascular lasers. Although this patient responded well to topical therapies, if this patient had not, ophthalmologic referral would have been necessary for alternative therapies. Currently, there are no reports on the use of anti-VEGF as adjuvant therapy for recurrent CPG but a few reported cases have been documented (15). The proliferation of capillaries and inflammatory cell infiltration occurs due the release of VEGF and other proinflammatory factors. Anti-VEGF treatment for CPG can help to minimize or stop the proliferation of new blood vessel growth; similar to how anti-VEGF is proven to be useful in treatment of retinal and choroidal neovascularization.

Conclusion

Pyogenic granuloma is a benign, acquired, vascular lesion that can develop on both mucosal and cutaneous surfaces. CPG typically occurs with a pre-existing injury but idiopathic cases have been reported. These lesions can grow on the palpebral or bulbar conjunctiva. These lesions can grow rapidly and prompt patients to become symptomatic and concerned. Multiple effective treatment options are available but non-invasive methods have been proven to be very effective. This case demonstrates a successful outcome with treatment of topical therapeutics.

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