

Case Report

OCULAR SPOROTRICHOSIS - A CASE SERIES AND LITERATURE REVIEW

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ARTICLE INFO

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Received:
January 2023
Accepted for publication:
February 2023

Keywords:

sporotrichosis;
Parinauds Oculoglandular
Syndrome (POGS);
Sporothrix Schenckii;
tropical countries.

ABSTRACT

We describe three patients with a similar presentation of granulomatous lymphocutaneous infiltration involving the tarsal conjunctiva and eyelid; and a literature review on ocular sporotrichosis in the Asia Pacific region. In this series, all patients had fungal cultures of "Sporothrix Schenckii" isolated from conjunctival biopsies. Oral Itraconazole 200 mg OD was started in all patients for an average period of 12 weeks. All of them recovered well with no ocular sequelae. Isolating the causative organism from a wide spectrum of organisms causing POGS is pertinent to ensure treatment success. A high degree of suspicion from history of exposure to domestic animals such as cats may expedite diagnosis and treatment.

INTRODUCTION

Sporotrichosis is a form of mycosis caused by a dimorphic fungi, *Sporothrix Schenckii* resulting in infections localized to the skin, subcutaneous tissue and adjacent lymphatic vessels [1]. It is widely distributed worldwide, with majority of cases reported from the Asia Pacific region, Latin America, South Africa, India and Japan [2]. Lymphocutaneous form is the commonest aside from other forms such as cutaneous, mucosal and extracutaneous forms. It commonly starts as a nodule or ulcer at the site of inoculation before spreading through the regional lymphatics causing ulceration and fistula before it eventually heals [3]. Parinaud's Oculoglandular Syndrome (POGS) is an ocular manifestation of sporotrichosis characterized by granulomatous conjunctivitis associated with preauricular and submandibular lymphadenopathy [4].

CASE PRESENTATION

Case 1

A 38-year-old Malay female with underlying Type II diabetes mellitus and hypertension, presented with swelling on the right upper eyelid for 2 weeks, followed by similar swellings on the ipsilateral cheek. This was preceded by bilateral blurring of vision for a few months prior to the swelling. She has a cat at

home but denied any history of cat scratch or bites. She completed a course of antibiotics by a general practitioner one week prior to presentation. The best corrected visual acuity at presentation were 6/36 OD and 6/24 OS. Examination showed an erythematous and tender nodular swelling on the right upper eyelid, with minimal eye discharge (Figure 1A). She also had multiple tender pre-auricular lymph nodes measuring between 0.5cm – 1cm in a track-like arrangement (Figure 1B). Granulomatous nodules were also seen on the lower palpebral conjunctiva (Figure 1C). Fundus examination revealed proliferative diabetic retinopathy changes which were treated. She was initially started on oral Doxycycline 200mg BD and topical Moxifloxacin QID in the right eye. However, because of poor clinical response, a skin and conjunctival biopsy were taken and oral Itraconazole 200mg OD was commenced, with close liver function monitoring. The right eyelid swelling, and conjunctival lesions gradually improved and complete resolution was achieved after 3 months of treatment (Figure 2A-C). The skin and conjunctival tissue cultures were found to be positive for *Sporothrix schenckii*.

Case 2

A 45-year-old Malay lady with underlying hypertension, presented with left eyelid swelling, intermittent redness and a painful swelling on her left

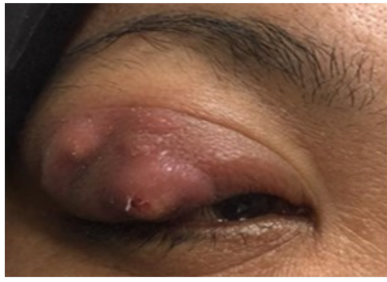


Figure 1A: Upper lid nodular swelling.

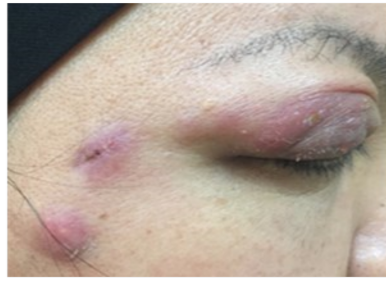


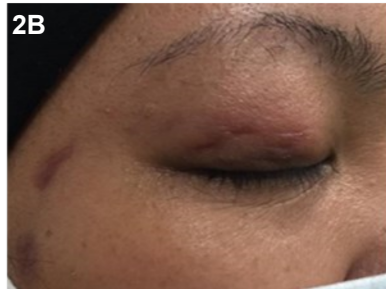
Figure 1B: Pre – auricular lymph nodes in track – like form.



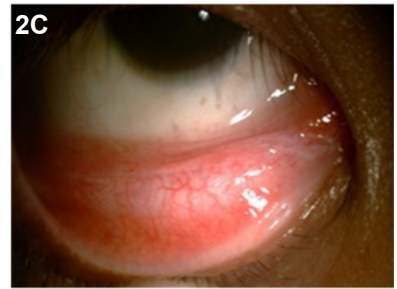
Figure 1C: Lower lid palpebral conjunctival granulomas



2A



2B



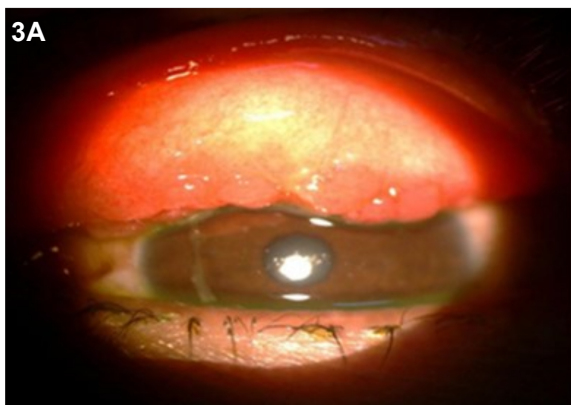
2C

Figure 2A-C (from left to right): Resolution of conjunctival and adnexal lesions after completion of treatment.

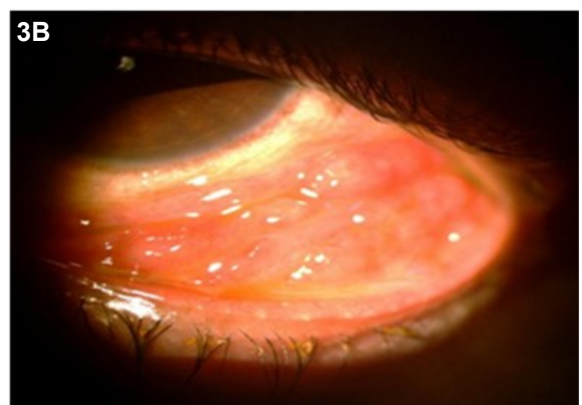
cheek for a month. There was no antecedent history of trauma or insect bite. However, her cat was recently ill with sporotrichosis. The patient was treated with oral antibiotics by a general practitioner prior to presentation to the eye clinic. The best corrected visual acuities at presentation were 6/9 OU. The left upper and lower eyelids were swollen and erythematous with multiple granulomas seen on the palpebral conjunctiva (Figure 3A & B). There were multiple palpable, small preauricular lymph nodes and a large submandibular lymph node measuring 3cm x 3cm. The patient was treated with oral Itraconazole 200mg OD for a total duration of 3 months with close liver function monitoring. The lesions progressively improved with complete resolution of all clinical signs after 3 months (Figure 4A & B). Culture of the conjunctival biopsy was positive for *Sporothrix schenckii*.

Case 3

A 64-year-old lady with underlying diabetes mellitus and hypertension, presented with right eye redness and swelling for a month, associated with yellowish ocular discharge. She denied any trauma or insect bite. However, she has four pet cats at home, one of which was recently diagnosed with a skin disease on treatment. Her best corrected visual acuities in both eyes at presentation were 6/9 OU. There was generalized conjunctival injection of the right eye with multiple granulomas seen on the inferior bulbar conjunctiva (Figure 5A). There was also enlarged right preauricular lymph node, measuring approximately 2 cm. The patient was initially treated as POGS secondary to cat scratch disease with oral doxycycline. However, there was no clinical improvement for 2 weeks. Fungal culture of the conjunctival biopsy was



3A



3B

Figure 3A & B: Upper and lower lid palpebral conjunctiva granulomas.



Figure 4A & B: Resolution of conjunctival granulomas after treatment

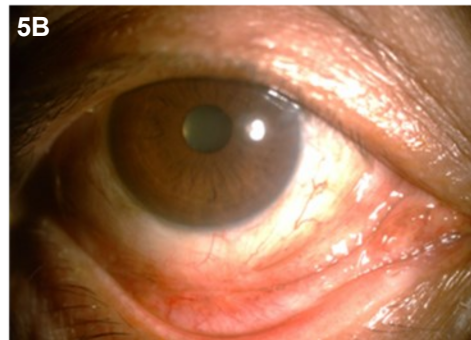
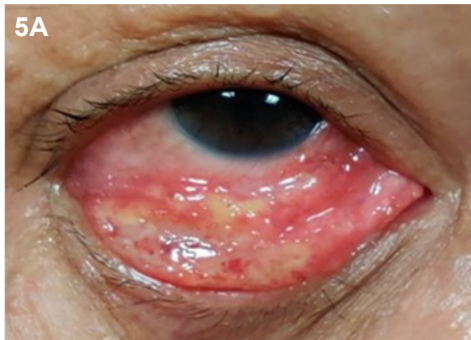
positive for *Sporothrix schenckii* (Figure 6). The treatment was then changed to oral Itraconazole 200mg OD given for a total of 3 months until total resolution of the signs was seen (Figure 5B).

transmission in Brazil since late 1990s [5]. Review of literature revealed most reported cases were associated with feline exposure [7,11-12,15-22] (Table 1), as seen in all our cases.

DISCUSSION

Sporotrichosis generally occurs by traumatic inoculation of soil, plants, and organic matter contaminated with the fungus. Traditionally, activities such as floriculture, agriculture, mining, and wood exploitation are associated with the mycosis. Zoonotic transmission is found to be a major source with more than 2,000 human cases reported via cats'

Cats are a potentially high zoonotic transmitter for sporotrichosis usually occurring via cat scratches or bites (6). However, this may not always be the case as studies found that contact with ailing cats alone is sufficient for human exposure and self-inoculation, due to the high fungal load in these cats [7]. This observation is also seen in our patients as none of them had any history of cat scratches or bites. Additionally, unperceived injuries may have easily occurred especially during animal handling as



Figures 5A (right to left): Lower lid bulbar conjunctiva granulomas, 5B: Resolution after treatment.



Figure 6: Sporotrichosis colony in Sabaraud's agar from the patient's conjunctival biopsy.

it is a part of cat's behaviour to rub their faces against their handlers, to bite, and to scratch [8]. It could be a coincidence but females, as is the case in all our patients, may naturally be closer to their pet cats that could have led to the auto-inoculation of the fungi [9], agreeing with majority of reported cases of cat associated sporotrichosis involving primarily women.

Sporotrichosis can cause a myriad of ocular presentations, ranging from granulomatous conjunctivitis, dacryocystitis, granulomatous uveitis, choroiditis, endophthalmitis and POGS [7]. In our series, the patients were all diagnosed with POGS based on the clinical presentation of granulomatous conjunctivitis and lymphadenopathy, apart from adnexal involvement in the first patient. Arinelli et al (2020) reported that all their POGS patients had intense inflammatory reaction involving the bulbar conjunctiva, related to the dense lymphatic supply of this tissue [12]. POGS caused by sporotrichosis can be easily misdiagnosed as it is the lesser-known

cause in comparison to more common ones like cat-scratch disease. Late diagnosis may delay treatment initiation resulting in ocular complications and sequelae.

Sporotrichosis can be diagnosed based on a combination of clinical, epidemiological, and supportive laboratory data. Culture of a tissue biopsy is confirmatory of sporotrichosis infection [3]. All patients in this series were culture positive from the biopsy samples. However, obtaining culture results may take several weeks and a false negative culture could be attributed to the deeply lodged residing cyst in host tissue [11]. In a case series of 10 patients with POGS caused by sporotrichosis by Ribeiro et. al., 7 of them were culture negative. Even so, favourable outcomes were achieved after early treatment [12]. Therefore, early treatment is recommended if there is a high index of suspicion for sporotrichosis. Ocular complications such as symblepharon and conjunctiva fibrosis have been reported to occur

Table 1: Chronologically reported cases of ocular sporotrichosis from tropical countries.

Author/Year	Country	No of cases	Feline Exposure	Ocular Manifestation	Treatment	Outcome
Ramirez et al 2015 [15]	Peru	21	Yes (10 pts)	Ocular Adnexa	Potassium iodide	Complete resolution
Yamagata M et al 2017[7]	Brazil	3	Yes (2 pts)	Granulomatous conjunctivitis	Oral Itraconazole	Symblepharon & Conjunctival fibrosis (2 pts)
Ferreira TA et al 2018[16]	Brazil	1	Yes	Granulomatous conjunctivitis	Oral Itraconazole	Complete resolution
Ling JL et al 2018[17]	Malaysia	1	Yes	POGS	Oral Itraconazole	Complete resolution
Furtado et al 2019[18]	Brazil	2	Yes (1 pt)	POGS Ocular Adnexa (dacryocystitis) Choroiditis	Oral Itraconazole	Complete resolution
Ribeiro CR et al 2020 [12]	Brazil	10	Yes	POGS	Oral Itraconazole	Complete resolution
Gameiro et al 2020[19]	Brazil	1	Yes	Ocular Adnexa Granulomatous conjunctivitis	Oral Itraconazole	Complete Resolution
Reinprayoon et al 2020[11]	Thailand	1	Yes	Conjunctival Plaque	Topical Terramycin Topical Maxitrol	Complete resolution
Ahmad Fauzi et al 2020[20]	Malaysia	6	Yes	Granulomatous conjunctivitis Eyelid lesions	Oral Itraconazole	Symblepharon (4 pts)
Lee HY et al 2020[21]	Malaysia	1	Yes	POGS	Oral Itraconazole	Complete resolution
Theng LY et al 2021[22]	Malaysia	1	Yes	Granulomatous Conjunctivitis	Intralesional Amphotericin B Topical Fluconazole	Complete resolution
Ramirez et al 2021[23]	Brazil	3	Yes (1 pt)	Ocular Adnexa	Oral Itraconazole	Complete Resolution
Liborio et al 2021[24]	Brazil	1	Yes	POGS	Oral Itraconazole	Complete Resolution
Lemes et al 2021[25]	Brazil	2	Yes	POGS	Oral Itraconazole	Complete Resolution

even after treatment [7,20].

The treatment regime used in all our patients was oral Itraconazole 200 mg BD for an average duration of 3 months; and continued for a period of 2-4 weeks after resolution of clinical signs. This is similar to the regime used in most studies that were included in our literature review [7, 12, 16-21, 23-25]. Other treatment options such as potassium iodide [10], topical tetracycline [13] and intralesional amphotericin B have been described [22]. Itraconazole, an azole antifungal, has been long established as the drug of choice for treatment of sporotrichosis owing to its low toxicity and good tolerance even in long term treatment [13]. We recommend that ocular sporotrichosis should be treated with oral itraconazole 100 – 200mg, similar to the dose for cutaneous infection until complete resolution of the lesions. This may be extended to an addition of 2-4 weeks, with a total duration of 3-6 months [14].

CONCLUSION

Sporotrichosis is a zoonotic infection in many tropical countries and ocular sporotrichosis is potentially disabling as described in this case series. Misdiagnosis can cause delay in treatment and further exacerbate and worsen the condition. History of contact with diseased cats even without cat scratch or bites is a strong risk factor for sporotrichosis. Antifungal treatment with Itraconazole should be started when there is a strong suspicion of sporotrichosis while waiting culture results from tissue biopsy.

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