A Peculiar Cause of a Watery Eye

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Introduction

Sarcoidosis is a multisystem disorder characterised by non-caseating granulomatous inflammation with a wide variety of potential presentations. The cause of the disease is largely unknown, however, CD4+ T cells are thought to play a role in the excessive inflammation within tissues. Sarcoidosis incidence is globally estimated at 16.5/100,000 for men and 19/100,000 for women (Hillerdal et al, 1984). The most common manifestation of sarcoidosis is pulmonary sarcoidosis. It is estimated that 90% of patients will have an abnormal chest x-ray with bilateral hilar lymphadenopathy, pulmonary infiltrates or fibrosis (Merck, 2018). Other less common presentations include sinonasal, ocular, dermatological, cardiac muscle or bone involvement. A recent study aiming to determine cause of death in patients diagnosed with sarcoidosis, the most prevalent determinants of mortality were shown to be respiratory and cardiac failure as a result of sarcoid spread (Swigris et al, 2011). This highlights the importance of recognising and treating sarcoidosis early. The following case is an example of how sarcoidosis may not present in a classical manner, requiring an open mind and lateral thinking to arrive at the correct diagnosis.

Case

A 28-year-old male presented to the emergency department at the Royal Victoria Eye and Ear Hospital with a two-day history of painful, red swelling inferomedially in the left lower lid. The patient also reported a background history of left sided epiphora (eye watering) for the preceding eight months. This had been treated by his general practitioner with chloramphenicol drops, a topical antibiotic commonly used to treat eye-related infections. The patient was otherwise well with no other symptoms and no past medical history of note. There were no other findings on review of his other organ systems.

On examination, a 15 mm erythematous swelling was present below the medial canthus of the lower left lid. With mild pressure, mucopurulent material was expressed from the lower punctum. He was afebrile at roughly 37°C and vitals were within normal limits. He was prescribed oral co-amoxiclav and advised to continue with chloramphenicol drops.

The following day the patient returned with worsening pain in his lower lid and associated epiphora reporting malaise. On examination the swelling had increased in size and temperature was elevated to 38°C. The area was incised and the mucopurulent contents were sent for culture and sensitivity. The patient was admitted for intravenous (IV) co-amoxiclav for 48 hours and then discharged home on oral antibiotics. Three days following the course of IV antibiotics, the swelling, erythema and pain described were resolved. Due to scarring of the nasolacrimal duct from the infection, a dacryocystorhinostomy (DCR) procedure was scheduled for one week later.

The procedure performed via endoscopic approach to create a new nasolacrimal duct. During the DCR procedure, friable nasal mucosa was noted by the surgeon and a biopsy was sent for pathology consult. At this point, it was suspected that there may be an underlying disease causing this presentation. Bloods were taken post-operatively and a routine blood profile was ordered. Anti-neutrophil cytoplasmic antibodies (ANCA) and angiotensin converting enzyme (ACE) were also requested as both biomarkers can be useful in predicting the presence of certain systemic diseases. ANCA antibodies are present in various vasculitides (inflammatory conditions of blood vessels) and ACE is elevated in sarcoidosis. Due to the suspicion that sarcoidosis may be present, a chest x-ray was also ordered to establish pulmonary findings. A computed tomography (CT) sinus was requested to visualise the soft tissues of the nasal cavity.

Two weeks post-DCR, the patient re-presented to the emergency department with recurrence of left sided lower lid swelling. Oral co-amoxiclav was prescribed however swelling persisted despite antibiotic therapy. Results from investigations carried out at the time of surgery displayed raised calcium and ACE levels with bilateral lung hilar lymphadenopathy on chest x-ray (Figure 1). Results from the biopsy taken during the DCR displayed noncaseating, granulomatous inflammation of nasal mucosa. The combination of the x-ray, histology and biochemical findings make the diagnosis of sarcoidosis definitive. Granulomas present in sarcoidosis produce excessive amounts of ACE resulting in characteristic elevated levels, similarly the increased inflammatory activity results in high serum calcium levels. The patient was prescribed a tapering course of oral prednisolone and referred for respiratory opinion to further investigate the chest x-ray findings. At the latest review six weeks post-op, pain, swelling and erythema of the left lower medial canthal area had improved and the patient was tapered off oral prednisolone.

Sinonasal Sarcoidosis (SNS)

Separate studies carried out by Aubart (Aubart et al, 2004) and Yanadağ (Yanadağ et al, 2006) found the prevalence of sinonasal mucosa inflammation in sarcoidosis to be as uncommon as 1% amongst patients with sarcoidosis. These patients can present with nasal crusting, congestion, epistaxis, pain or anosmia. On examination, patients with SNS are found to have friable nasal mucosa, nasal polyps, or characteristic submucosal nodularity (McCaffery and McDonald, 1983).

However, the patient did not have nasal polyps or submucosal nodularity as the only clinical finding to suggest underlying disease was abnormally friable nasal mucosa. Clinicians should be aware of variable presentations, being especially vigilant in cases which encounter unexpected

Stage	Disease Progression	Suggested Treatment
I	Mild reversible disease, paranasal sinuses not involved	Saline nasal spray with nasal irrigation and topical nasal steroids
II	Moderate disease, potentially reversible, sinuses and paranasal sinuses involved	Stage I therapy combined with intra-lesional steroids
III	Severe and irreversible nasal and sinus disease	Stage I and II therapy combined with systemic therapy

Table 1. Proposed grading system by Krespi.

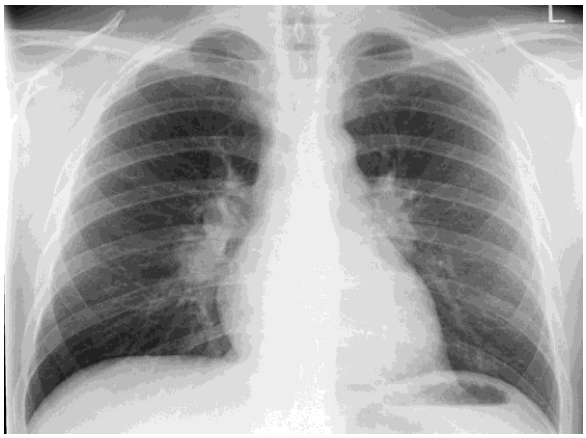

Figure 1; Chest X-Ray displaying characteristic bilateral hilar lymphadenopathy and reticulonodular opacities.

complications, such as recurrent infections as with the present case.

There have been attempts to classify SNS in order to determine the best treatment regimes, such as the system proposed by Lawson in 2014 (Lawson et al, 2014). This system divides SNS into four subgroups: hypertrophic, atrophic, destructive and nasal enlargement. However, due to gaps in the scientific literature regarding SNS, a robust treatment algorithm that is unanimously accepted does not exist. This is mostly due to the rarity of the disease subtype and the subsequent lack of clinical trials.

The natural progression of SNS without any other systemic involvement is different to regular systemic sarcoidosis. SNS is associated with greater morbidity than classical sarcoidosis. A case series demonstrated that patients with SNS required systemic treatment (corticosteroids / immunosuppressants) more often than those without sinonasal involvement (100% vs. 57.7%) and a longer duration of treatment (88 months vs 22 months). The same study showed that the number of patients who underwent spontaneous remission (cessation of disease process without treatment) were significantly fewer in the SNS cohort at 10 years (6.2% vs. 55.7%) (Aubart et al, 2004).

Management

Many sarcoidosis cases are detected incidentally and are asymptomatic, in which the patient's treatment consists primarily of monitoring for deterioration. Currently, there are no universally accepted guidelines for the treatment of symptomatic sarcoidosis with sinonasal involvement. Oral steroids are the mainstay of treatment for most patients as the anti-inflammatory effect is effective in treating granulomatous inflammation (McKinzie et al, 2010). Topical nasal corticosteroids can augment treatment and control local inflammatory processes. Nasal irrigation and emollients also play important roles in symptom management.

If necessary, systemic steroids may be combined with topical therapy (Broaddus et al, 2015). If the disease requires prolonged systemic steroid use, a steroid sparing agent should be used instead. Cytotoxic therapy like methotrexate or azathioprine may be used in these cases, as can anti-tumour necrosis factor (anti-TNF) agents such as adalimumab (Callejas-Rubio, 2008). It has also been shown to be possible in certain situations for disease to regress spontaneously. Antibiotics are used to treat secondary infections related to mucus stasis or sinus obstruction.

Surgery may also be required to treat sequelae such as dacryocystitis that can arise as a result of inflamed tissue. If the sequelae of SNS damage nasolacrimal ducts as in this case, they must be repaired via DCR to achieve satisfactory long-term outcomes. The DCR enables ocular secretions from the eye to the nasal cavity by creating a new channel which is kept patent post-operatively with O'Donoghue tubes until the channel heals sufficiently to remain patent without supports. The O'Donoghue tubes are then removed during an outpatient procedure at a later date. In 1995, a grading system was proposed in by Krespi (Krespi et al, 2005) as a guide for determining management. The system grades disease severity according to nasal involvement and gives suggested guidelines to treatment.

Conclusion

Diagnosis of SNS can be delayed or missed entirely without thorough examination. The presented case demonstrates that nasolacrimal or ophthalmological features may be the only presenting symptoms. An extensive systems review including exploration of symptoms including nasal congestion, epistaxis, epiphora, anosmia would enable the clinician to query the possibility of SNS. Recognition of this entity is important as treatment significantly reduces morbidity and mortality in patients.

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