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The eye and inflammatory rheumatic diseases: The eye and rheumatoid arthritis, ankylosing spondylitis, psoriatic arthritis

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A B S T R A C T

Rheumatoid arthritis, ankylosing spondylitis and psoriatic arthritis are associated with potentially sight-threatening inflammatory eye disease. Although the ocular manifestations associated with ankylosing spondylitis and psoriatic arthritis are similar, such as anterior uveitis, this differs from rheumatoid arthritis where dry eye, peripheral ulcerative keratitis and scleritis are the major ocular complications. Apart from causing sight loss, these conditions are painful, debilitating, often recurrent or chronic and may require long-term therapy. Treatments such as ocular lubricant, topical corticosteroid, systemic corticosteroid and systemic immunosuppression are often similar for the underlying systemic disease. Yet for the treatment of the ocular complications, the evidence base is weak. Close collaboration with a rheumatologist is often essential, particularly in the management of these patients.

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The eye and rheumatoid arthritis

Ocular complications of rheumatoid arthritis

The ocular complications of rheumatoid arthritis (RA) more commonly affect the front (anterior segment) than the back of the eye (posterior segment) [1]. Anterior segment disease includes dry eye,

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peripheral ulcerative keratitis (PUK), episcleritis and anterior scleritis [2]. Posterior segment disease includes posterior scleritis and rarely a retinal vasculitis [3].

What is the most frequent ocular manifestation of RA?

The most frequent ocular manifestation in patients with RA is dry eye disease (DED, keratoconjunctivitis sicca) with up to 45% of patients having clinical features consistent with dry eye and 38% of patients being symptomatic [4]. It is defined as a multifactorial disease of the tears and ocular surface that results in symptoms of discomfort, visual disturbance and tear film instability with potential damage to the ocular surface, accompanied by increased osmolarity of the tears and inflammation of the ocular surface [5]. A vicious cycle of hyperosmolarity and chronic inflammation leads to increased friction and eventual ocular surface damage. The ocular surface is a highly intricate and specialised mucosa, with the epithelium running from the meibomian gland orifices into the meibomian glands, along the tarsal conjunctival epithelium (on the back surface of the eyelids), the fornical conjunctiva (deep in the natural gutter between the eyelid and eye ball), the epithelium of the lacrimal gland and the bulbar conjunctival epithelium (overlying the eyeball), merging into the corneal epithelium at the limbus. Each specialised layer of the ocular surface contributes to a component of the tear film. The lacrimal and accessory glands produce the central nutritive aqueous component; the Meibomian glands, the oily outer lipid that provides tear film stability; and the conjunctival goblet cells, the inner 'surfactant' mucin that primarily improves the wettability of the ocular surface. The eyelids and lashes provide fundamental protection through the blink mechanism, as well as wiping away debris from the ocular surface and replenishing surface with a fresh layer of tears. All components of the ocular surface are linked functionally by the key 'systems' (neural, vascular, endocrinological and immunological) that are vital for ocular surface homeostasis and defence [4]. The ocular surface system has a unique function to maintain optical clarity of ocular tissues through provision of protective mechanisms, resisting trauma and pathogens. Deficiency of any component of the ocular surface system may lead to DED that is classically defined as aqueous deficient or evaporative. Both forms are prevalent in RA where the majority of patients have mixed disease. Risk factors include older age, female gender, reduced androgen levels, use of exogenous oestrogens, imbalance in the dietary intake of omega-3 and omega-6 fatty acids and the use of antidepressants.

What is the impact of dry eyes on a patient's life?

DED is a significant global public health problem and there is yet no effective treatment [6]. Symptoms are variable and include itching or burning, sensation of a foreign object in the eye, crusty material clinging to the eyelashes, light sensitivity, intermittent blurred vision and complaint of scant or broken eyelashes. Visual disturbances lead to problems associated with activities such as reading, computer use, cooking, navigating stairs, and driving a car, together with lower professional work performance, role limitations, lower vitality and poorer general health [7]. Several studies have indicated that the health-related quality of life (HRQoL) burden increases with the severity of disease and 2 utility assessment studies have shown that utilities for severe DED are similar to those reported for renal dialysis and severe angina [8,9]. The impact of DED on mental health is also apparent. In a study evaluating 7207 patients with dry eyes correcting for factors associated with systemic disease, adjusted odds ratio for DED and anxiety was found to be 2.8 (95% confidence interval [CI] 2.6–3.0) and for depression 2.9 (95% CI 2.7–3.1) [10]. In a meta-analysis, dry eye patients with rheumatic disease were more likely to suffer from depression [11].

Objective symptomatology is graded according to a range of patient reported outcome utility instruments specific for ocular surface disease, dry eye diagnosis, epidemiological studies and clinical trials. The questionnaires interrogate disease in different ways; for example, diagnosis alone, to identify precipitating factors or to quantify the impact on quality of life. The time taken to administer a questionnaire and mode of administration (self, interviewer and phone) influence the choice of questionnaire. The most commonly used in an ophthalmology setting is the Ocular Surface Disease Index measuring the severity of DED in the form of a 12-item questionnaire subdivided into 3 domains (visual function (6), ocular symptoms (3), environmental triggers (3)) providing a scoring algorithm

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