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Sir, Repetitive stress injury and thyroid eye disease

Thyroid eye disease (TED) is an integral part of the clinical presentations of thyroid disease. The clinical manifestations of TED are due to inflammation, oedema, and fibrotic changes within the soft tissues of the orbit resulting in a variety of clinical manifestations.

Extra-ocular muscles (EOMs) involvement in TED is characterised inflammation and swelling of the EOMs. This will eventually lead to tightening of the some EOMs resulting in limitation of eye movements and diplopia.

The most common motility abnormality is limitation of elevation owing to fibrosis and tightness of the inferior rectus muscle. This followed by medial rectus, superior rectus, and the lateral rectus in that order.

A valid question is why the inferior recti are the most commonly involved muscles, followed by the medical recti, superior recti, and lateral recti in that order. There are two variables in this situation-the degree of involvement of a particular EOM involvement in the pathological process and its function. Given that all EOMs are more or less involved to a variable degree in the pathological process underlying TED, the second variable may explain why certain EOMs are more commonly involved by fibrosis than others. The most common gaze in humans, as upright creatures, used in the daily activities such as walking, eating, desk work, and so on, is looking downwards. The second most common gaze used is convergence looking at close objects followed by looking up and looking laterally in that order.

From the above, we may deduce that a frequently contracting/used muscle, which is involved by the pathological process of TED, is more likely to undergo fibrotic changes. Thus, thickened and inflamed muscle fibres may undergo fibrotic changes when used 'excessively'.¹ A pre-existing latent or manifest deviation

that results in increased tone/contraction of a particular muscle(s) might also have an influence on which muscle involved by contracture, particularly, in the case of the lateral recti. Such injury could be classified as small repetitive stress injury (RSI) leading eventually to fibrotic changes. This RSI is analogue to what is seen in xantholasma of the upper eyelids and keloids at the tips of the elbows.

Xanthelasma is characterised by yellowish plaques deposits that occur commonly in the medical canthus areas of the upper and less commonly the lower eyelids. It mostly occurs in patients with hyperlipidemia. Perhaps the eyelid blinking, squeezing the eye, and frequent opening and closure of the eyelids, may result in leakage of the micro vessels and deposition of lipids and the inner corner of the eyelids, the area with the thin skin with less adherent tissue. Similarly, the blinking mechanism (along with frequent closing and opening of the eyelids), which results in frequent contraction of the levator muscle, may have a role in the tightening of the levator muscle in patients with TED resulting in lid retraction, a common feature in TED.

Another possible example of minor trauma and irritation in predisposed individuals may produce keloids. The trauma may be trivial, for example, pressure on the tips of the elbows can produce fibrotic changes resulting keloids in susceptible patients perhaps analogue to what is seen in the frequently contracting EOMs in TED.

Conflict of interest

The author declares no conflict of interest.

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Sir,

When is the best stage of training to sit the Fellowship of the Royal College of Ophthalmologists Examinations

The Royal College of Ophthalmologists (RCOphth) offers examination deadlines, therefore leaving when to best sit these examinations to trainees. The Fellowship