



Tolperisone, a centrally-acting muscle relaxant: a possible cause of macular haemorrhage

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Received: 11 July 2019 / Accepted: 29 July 2019 / Published online: 16 September 2019
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Case report

A 40-year-old male patient with past medical history of chronic neck pain and stiffness presented to Southampton Eye Unit with sudden painless reduction of vision in his left eye (OS). At presentation, his visual acuity (VA) was 6/6 in the right eye (OD) and 6/60 Snellen OS.

Anterior Segment (AS) examination, intraocular pressure (IOP) and dilated funduscopy of the right eye were all unremarkable. AS examination and IOP of the left eye were also unremarkable. However, dilated retinal examination of the left eye revealed mild vitreous haemorrhage, a large sub-hyaloid (pre-retinal haemorrhage) and multiple flame-shaped haemorrhages at the macular level (Fig. 1a).

The patient denied any past history of trauma. Past medical history was remarkable for chronic neck pain and stiffness, for which the patient used to take over-the-counter ibuprofen. From the patient's drug history, it was revealed that the patient used to take Tolperisone (Mydocalm®) regularly, a centrally-acting muscle relaxant to help alleviate his chronic neck issue. He stopped ibuprofen before starting Tolperisone. He reported that he had been taking Tolperisone tablets 150 mg/day for the last month (he skipped some days) before presentation. One week before presentation, he stopped taking Tolperisone, as he had noticed a mild visual obscuration. One week later, he reported sudden painless central visual loss in

the left eye. No other pertinent medical or family history was observed. Of note, he also reported no history of strenuous activities forcing him to breathe with a closed glottis.

Spectral domain-optical coherence tomography (SD-OCT) was carried out and confirmed the presence and the location of the bleed in the sub-hyaloid (pre-retinal) space with no changes at the level of the inner or outer retinal layers (Fig. 1b).

In the absence of past medical history of diabetes, hypertension or any other cardiovascular disease, we hypothesize that the bleed is likely to have been caused by the use and sudden cessation of tolperisone. Treatment options were discussed with the patient and both pars plana vitrectomy and observation were offered. The patient opted for a conservative approach.

One week later, BCVA OS was 6/36 and colour photographs and SD-OCT showed a partially organized clot in the sub-hyaloid space (Fig. 1c, d).

Six weeks later, the clot showed complete organization (Fig. 1e, f).

At 9 months post presentation, VA had improved to 6/6 in the affected eye with complete resolution of the pre-retinal bleed (Fig. 1g, h).

Discussion

Tolperisone (trade names include Biocalm®, Muscodol®, Mydeton®, Mydocalm®, Mydoflex®, Myolax®, Myoxan® and Viveo®) has been used in different rheumatological, orthopaedic, traumatic neurological disorders (e.g. cerebral palsy, traumatic brain injury, stroke, multiple sclerosis and different forms of spinal cord injury) [1].

Tolperisone is structurally related to the sodium channel antagonist local anaesthetics (lidocaine and procaine) and exhibits membrane stabilizing potency, which is characteristic of local aesthetic agents [1].

In addition, it increases blood flow to skeletal muscles [2]. The muscle relaxation caused by tolperisone is dose dependent [3].

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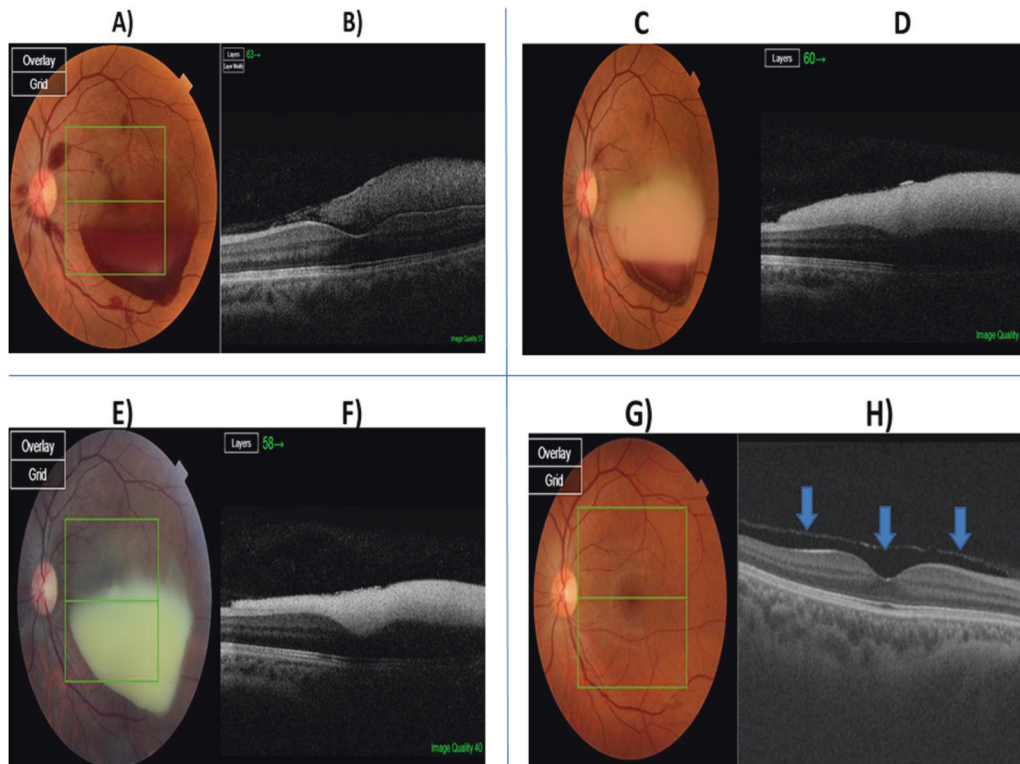


Fig. 1 Sequelae from tolperisone induced subhyaloid haemorrhage. Top left: images from initial presentation **a** colour photograph of the left eye showing the presence of a large sub-hyaloid haemorrhage and multiple flame-shaped haemorrhages **b** SD-OCT of the left eye at presentation confirmed the presence and the location of the bleed in the sub-hyaloid (pre-retinal) space with no changes at the level of the inner or outer retinal layers. Top right: images 1 week after the original presentation **c** colour photograph and **d** SD-OCT of the left eye 1 week post presentation demonstrating the formation of a partially organized clot which is seen as an area of hyper-reflectivity in the sub-hyaloid

space. Bottom left: images 6 weeks after the original presentation **e** colour photograph and **f** SD-OCT of the left eye 6 weeks post initial presentation demonstrating the formation of a fully organized clot which was observed as an area of increased hyper-reflectivity in the sub-hyaloid space. Bottom right: images from the final follow-up **g** colour photograph and **h** SD-OCT of the left eye 9 months after the original presentation that demonstrates complete resolution of the bleed. SD-OCT showed some thickening of the posterior hyaloid face after the resolution of the bleed (thick blue arrows)

In the case reported here, the patient was on no other medications and there was no other past medical or ocular history. We hypothesize that tolperisone may have caused the sub-hyaloid haemorrhage observed here.

To the best of our knowledge, this is the first case describing a sub-hyaloid haemorrhage secondary to tolperisone. This medication is not licensed for use in the United Kingdom. This potential side effect was also reported to the MHRA via their yellow card system.

Further research is needed to investigate the potential role of centrally acting muscle relaxants in inducing such an adverse reaction.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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