Retinal chalcosis

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1. Case report

A 40 year old copper factory worker presented with discomfort in the left eye. Left eye was pre-phthisical at presentation and had past history of surgery, details of which were not available. An Ultrasound revealed old retinal detachment. The right eye though asymptomatic, showed a sunflower cataract (Fig. 1A and B) with an ultrasound biomicroscopy revealing an asymptomatic foreign body (FB) (Fig. 1C). Vitreous opacities and multiple superficial macular deposits were seen (Fig. 1D) which appeared hypoaufowhif test on near infrared autofluorescence (Fig. 1E). Electroretinogram showed subnormal retinal responses (Fig. 1F). Optical coherence tomogram (OCT) showed that the lesions were superficial retinal in location (Fig. 1G) with normal retinal layers. The patient underwent vitrectomy with internal limiting membrane peeling to ensure removal of copper in limiting membranes and cataract surgery with FB removal. Rhodanine stain of lens capsule stained positive for copper deposits (Fig. 1H). Three months after surgery the deposits remained persistent (Fig. 1I). Best corrected visual acuity at presentation was 20/30 and remained stable in the post-operative period.

2. Discussion

Chalcosis has been described as a chronic reaction to copper alloys with a copper content less than 85%. Copper in the eye is mainly deposited in the limiting membranes, but OCT has revealed the presence of these lesions in the superficial retina, and that they are not limited to the internal limiting membrane alone. Raghavani et al. have described similar findings on OCT in their patient with chalcosis. A previous report by Yagihashi et al. has described a case of chalcosis bulbi diagnosed 22 years after injury. Our case confirms that copper foreign bodies have a higher chance of being relatively asymptomatic and can cause slow toxicity which does not show any significant reversal after foreign body removal. This also highlights the importance of safety glasses for all industrial workers.

3. Conclusion

Chalcosis can lead to multiple superficial retinal deposits which remain persistent in the immediate post-operative period. Copper foreign bodies can remain undetected. A strong index of suspicion is necessary, along with detailed history and ocular examination.

Patient consent

Written consent to publish this case has not been obtained. This report does not contain any personal identifying information.

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Conflicts of interest

All authors have no financial disclosures.

Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

Intellectual property

We confirm that we have given due consideration to the protection of intellectual property associated with this work and that there are no impediments to publication, including the timing of publication, with respect to intellectual property. In so doing we confirm that we have followed the regulations of our institutions concerning intellectual property.

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Research ethics

We further confirm that any aspect of the work covered in this manuscript that has involved human patients has been conducted with the ethical approval of all relevant bodies and that such approvals are acknowledged within the manuscript.

Written consent to publish potentially identifying information has been obtained.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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