

Case Report

Christmas tree cataract: A rare association with gout!

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ABSTRACT

The association between gout and ocular changes has been noted in literature, with evidence suggesting the presence of gout tophi and uric acid crystals in ocular tissue, including the ocular surface and macula. A rare manifestation is the appearance of polychromatic, shining, multi-coloured crystals in the lens nucleus resembling Christmas tree ornaments, known as Christmas tree cataract. While ocular tissue involvement in gout is recognized, this specific association has not been previously documented. This report presents two such cases: a 74-year-old female with a Christmas tree cataract in the right eye and a history of gout, and a 54-year-old male with similar findings in the left eye who was later diagnosed with gout. The report highlights this unique presentation, suggesting that uric acid crystal-induced cataract resembling a Christmas tree may be a possible, though rare, manifestation of gout supported by existing literature.

Keywords: Christmas tree cataract, Gout, Ocular manifestations of gout

INTRODUCTION

Christmas tree cataract is a rare but striking feature on slit-lamp examination. There are multi-coloured needle-shaped crystals embedded in the deep cortex and anterior nucleus of the lens. It looks like decorated branches of a Christmas tree.^[1]

Gout is a type of arthritis, where the monosodium urate crystals get accumulate in joints and soft tissues causing inflammation and intense pain.^[2] The association between cortical and posterior subcapsular cataracts is documented in the meta-analysis done by Luo *et al.*^[3] The risk of tophi deposition in the conjunctiva and sclera has also been documented.^[4]

Although the association between cataracts and gout is being shown in different studies, the Christmas tree appearance of cataracts related to gout has been reported for the 1st time to the best of my knowledge.

CASE REPORT

A 74-year-old lady presented with painless, progressive diminution of vision in her right eye for the past 6 months. Slit-lamp examination of the right eye revealed unilateral polychromatic, refractile needles with brightly-coloured

endpoints in the lens nucleus along with posterior subcapsular cataract [Figure 1]. The visual acuity in the right eye was 6/24. The left eye examination shows nuclear sclerosis, grade 1 with an aided visual acuity 6/9. She was also having right knee pain and swelling. Her serum uric acid was raised (7.3 mg/dL). She was a known case of gout. She advised physiotherapy, a low-purine diet, plenty of water, and to avoid red meat by the orthopaedic surgeon. She was taking non-steroidal anti-inflammatory drugs whenever there was pain. Her right eye was operated for cataract by phacoemulsification and her post-operative visual acuity was 6/6.

The second patient was a 54-year-old male. He was having a diminution of vision for 4 months in both eyes. The slit-lamp examination of the right eye showed grade III nuclear sclerosis, with a visual acuity 6/60. Left eye examination displayed changes of Christmas tree cataract with posterior subcapsular opacification with a visual acuity 6/18. He was advised cataract surgery in the right eye followed by the left eye. The patient gave a history of recurrent pain and swelling of his ankles and fingers. It was suggested to consult orthopaedic surgeon for further diagnosis and treatment for his joint pain. The laboratory and radiological investigations confirmed the diagnosis of gout.

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Figure 1: Slit-Lamp Examination: Polychromatic, refractile needles with brightly-coloured end points in the nucleus forming “Christmas Tree” pattern plus a posterior subcapsular cataract.

DISCUSSION

A Christmas tree appearance in cataracts is unusual. The arrangement of crystals looks like decorations for Christmas. There are still some disputes about the optical properties and chemical structure of the crystals. Increased calcium levels are responsible for the age-related aberrant breakdown of crystalline resulting in the formation of needles which are made up of cysteine.^[5] According to Pau H and Forster, the crystals are made up of cholesterol.^[6,7]

Anders and Wollensak tried to connect the formation of crystals with lipid metabolism.^[8]

Deposition of monosodium crystals is a characteristic of gout. The end product of purine metabolism is uric acid. Hyperuricaemia leads to excess accumulation of uric acid and finally monosodium urate crystals in joints and tendons.^[4]

The precipitation of uric acid crystals has been noticed in ocular tissue which includes lens and vitreous, though rarely.^[4]

Uric acid crystals deposit was found on ocular surface, especially in cornea and sclera in a few patients in a study done in China,^[9] as macular deposits by Jiang *et al.*^[10] and also as an orbital mass.^[11] A meta-analysis conducted on the association between Gout and risk of cataract, depicts the association between gout and cortical and post-subcapsular cataract.^[3] Li YJ *et al.* also showed the positive relationship between the drugs used to treat Gout, and cataract formation.^[9]

The association of Christmas tree cataract and myotonic dystrophy is documented.^[12]

The limitation of the study is that after the surgery, the crystals are not subjected to chemical analysis.

CONCLUSION

Christmas tree cataracts are rare and can be an incidental finding. Although the association of cataract and gout being shown in different studies; Christmas tree appearance of cataract related with gout has been reported for the 1st time, to the best of my knowledge. We confirm that there are no conflicts of interest to disclose, and this research received no external funding.

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