Mature Cataracts in a Young Patient Under Tamoxifen Treatment for Male Infertility: A Case Report

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ABSTRACT

We aim to present a case who developed mature cataracts shortly after the use of tamoxifen, a selective estrogen receptor modulator, for male infertility. A 38-year-old male presented with painless, rapidly progressive decreased visual acuity in the left eye for two months. He was taking 20 mg of tamoxifen daily for 3 months. Anterior segment examination of the left eye proved a milky-white cataract. Patient had no family history or other secondary causes of cataract such as previous ocular trauma, ocular disease or systemic disease. Phacoemulsification surgery was performed without complication and the best corrected visual acuity of the left eye improved to 20/20 after surgery.

Keywords: Cataracts, Male Infertility, Tamoxifen.

INTRODUCTION

Tamoxifen, a synthetic non-steroidal type I estrogen antagonist usually prescribed in the treatment of breast cancer, has also been recommended in the treatment of oligozoospermia to improve impaired spermatogenesis in male patients with infertility. Ocular adverse effects secondary to high-dose (240-320 mg/day) tamoxifen was first described in 1978 by Kaiser-Kupfer and Lippman.[1] Later, it was reported that even smaller doses (20-40 mg/day) of tamoxifen can affect ocular structures including cornea, lens, retina or optic nerve.[2,3] Lens changes noted in patients receiving tamoxifen therapy included mild to moderate nuclear sclerosis and/or subcapsular cataracts (anterior or posterior).[4] Nonetheless there is controversial data in the literature that tamoxifen induces lens opacities. It is unclear from the case reports whether lens changes were regarded as incidental age-related findings or were attributed to tamoxifen therapy.

Less is known about the true incidence and severity of tamoxifen-related ocular diseases in males since most of the studies in the literature were conducted on female breast cancer patients receiving tamoxifen. Increasing use of the drug in men emphasizes the need for awareness of potential adverse ocular effects. To the best our knowledge, this is the first case report that demonstrates mature cataract formation in a male patient on tamoxifen treatment for infertility.

CASE REPORT

A 38-year-old male presented with painless rapidly progressive decreased visual acuity in the left eye for two months. His past medical history included various treatment modalities for male infertility and subsequent initiation of oral tamoxifen 20 mg per day for 3 months. Patient had no family history or other secondary causes of cataract such as previous ocular trauma, ocular disease or systemic disease.

Ophthalmologic examination revealed best corrected visual acuity (BCVA) of 20/20 in the right eye and hand motion in the left eye. Slit-lamp examination of anterior segment of the left eye was unremarkable besides a milky-white cataract with regular pupil (Figure 1). We were unable to view the left fundus which was occluded by white cataract. There was grade 1 nuclear cataract identified in the right eye. Pupils were symmetrical and direct and indirect light reflexes were intact bilaterally. Intraocular pressures (IOP) were 19 mmHg and 20 mmHg in the right and left eyes, respectively. Ultrasound examination of the left eye

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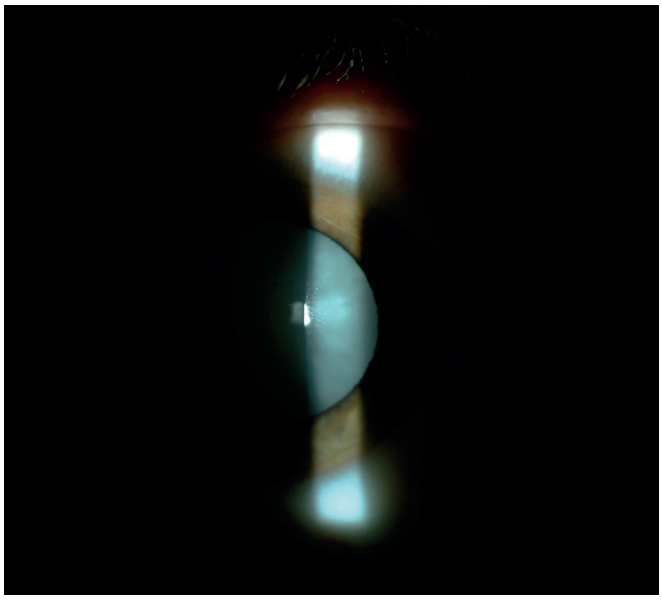

Figure 1. *Preoperative anterior segment photograph of the left eye showing white cataracts.*

showed an intact globe with clear vitreous and attached retina.

Phacoemulsification surgery was performed and a piece of intraocular lens (IOL) (+21 diopters; Acriva UD 613, VSY Biotechnology, Istanbul, Turkey) was implanted into the posterior chamber -in the bag- with no complications. During the surgery, we observed that the cataract was very loose and milky which could be removed easily by aspiration. The BCVA of the left eye improved to 20/20 after surgery (Figure 2).

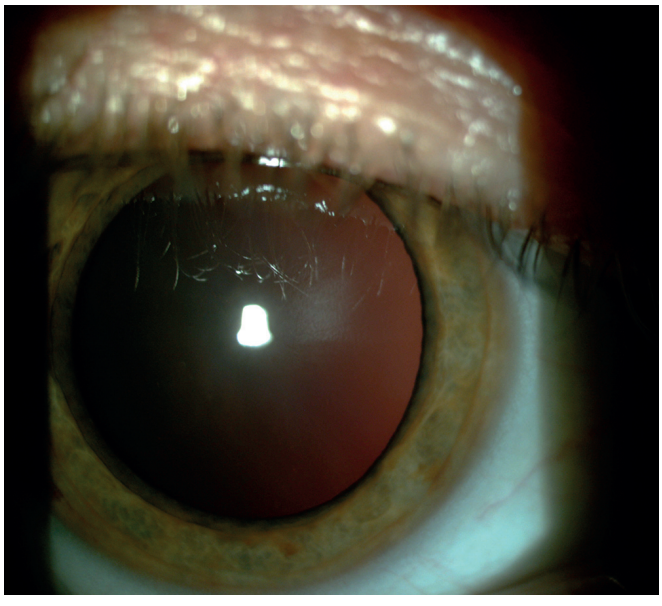

Figure 2. *Postoperative week 1 photograph with intraocular lens in the bag.*

DISCUSSION

Ocular adverse drug reactions attributed to tamoxifen include retinopathy in the form of intraretinal crystalline deposits mostly associated with macular edema, keratopathy in the form of subepithelial deposits and whorl-like or linear subepithelial opacities, lens changes and optic neuropathy.[4] One of the reported side effects of tamoxifen therapy is cataract. Lens clarity depends on the maintenance of adequate cell hydration, especially associated with the movement of chloride ions. Removal of extracellular chloride or addition of chloride channel blockers both result in lens opacification.[5] Tamoxifen is a potent blocker of chloride channels and Zhang et al. hypothesized that tamoxifen induces lens opacity and cataract formation through its effects on channel function.[6] Paganini-Hill et al. study suggested that five or more years of tamoxifen use increases the risk of cataracts.[7] Gorin et al. assessed 303 women with breast cancer and found that posterior subcapsular opacities (OR=4.03, P=.034) were more frequent in the tamoxifen-treated group.[8] Fisher et al. reported that the rates of developing cataracts and undergoing cataract surgery were 3.00 and 4.72 per 1000 women in the placebo and tamoxifen groups, respectively.[9] However, there is still a controversy regarding the induction of cataracts with tamoxifen therapy. A recent study indicated that current or past use of tamoxifen was not associated with an increased relative risk of cataracts.[10] A prospective and randomized 3.5-year follow-up study involving 60 patients by Parkkari et al. revealed no significant ocular side-effects including cataracts in breast cancer patients treated with tamoxifen.[11]

Tamoxifen is indicated in men with breast cancer, gynecomastia and more recently infertility. Since the levels and distribution of estrogen receptors differ between males and females, tamoxifen adverse effect profile may vary in men from what has been mostly reported in female breast cancer patients.[12] Less is known about the nature and incidence of tamoxifen-related ocular side effects in men despite its increasing use. Pemmaraju et al. reported three cases with ocular toxic effects including cataracts out of 126 male breast cancer patients.[13] Visram et al. and Bradley et al. reported ocular toxicity secondary to tamoxifen use in male breast cancer patients and they indicated that side effect profile of tamoxifen in men appear comparable with those described in the literature for women.[14,15]

Tsai et al. reported a 45-year-old female patient on tamoxifen therapy for breast cancer.[16] The patient developed asymmetrical posterior subcapsular lens opacities after taking a small dose (20 mg/day) in a short period of time (3 months). Similarly, our patient with the diagnosis of infertility we described in the current report was under

tamoxifen therapy for 3 months. He was 38 years old and had no ocular or systemic risk factors to develop mature cataracts. Although we cannot explain why our patient developed asymmetrical cataracts, this condition appears to be more than coincidental and we suggest that ocular toxicity was due to tamoxifen.To the best our knowledge, no mature cataract formation in males treated with tamoxifen for infertility have been reported previously. Although a single case is not enough to maintain a cause and effect relationship between tamoxifen and mature cataracts, all physicians should be aware of the potential for ocular toxicity associated with tamoxifen even when it is administered for short periods.

CONCLUSION

The visual disturbances associated with tamoxifen toxicity may be insidious, and to detect early signs of toxicity, patients should be encouraged for baseline ophthalmologic evaluations and follow-up monitoring of any ocular complaints that arise during therapy. Further prospective and randomized studies with long follow-up period to develop a better understanding of ocular toxicity in males with infertility are warranted.

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Conflict of interest statement

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Informed consent

A written informed consent was obtained from the patient to publish medical data and figures described in this case report.

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