We report a 20-year-old man who was referred for bilateral anterior subcapsular cataracts. He had a history of renal transplantation and had been treated with prednisolone, mycophenolate mofetil, and cyclosporine for the previous 3 years. He presented with gradual bilateral visual loss starting 6 months earlier. On slitlamp examination, bilateral anterior subcapsular cataracts were detected in both eyes. Appropriate surgery was performed and histopathological examination done for the anterior capsule specimen. Hematoxylin–eosin staining of the anterior capsule revealed significant subcapsular scar formation in the context of fibroblast proliferation.

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CASE REPORT

A 25-year-old man with a history of kidney transplantation was referred to our hospital with a complaint of gradual bilateral loss of vision for 6 months. He had a history of kidney transplantation 3 years previously, which was rejected, and a second kidney transplantation 6 months earlier. He had been on a regimen of prednisolone (1 mg/kg/day, tapering to 15 mg/day) accompanied by mycophenolate mofetil 2 gr/day and cyclosporine 250 mg/day for 3 years.
On ophthalmologic examination, decrease of visual acuity in both eyes was detected. The uncorrected distance visual acuity (UDVA) was 7/10 in the right eye and 5/10 in the left eye and did not improve with spectacle correction. The slitlamp examination showed bilateral anterior subcapsular opacities (Figure 1).

Because the UDVA was more limited in the left eye, the first surgical intervention was done in that eye. Cataract extraction by sutureless clear corneal phacoemulsification and intraocular lens implantation under topical anesthesia was performed. The anterior subcapsule of the lens was sent for histopathological examination. Hematoxylin–eosin staining of the left anterior capsule of the lens revealed focally thickening fibrotic scar tissue with significant subcapsular scar formation in the context of fibroblast proliferation (Figures 2 and 3).

One week following cataract surgery, the eye was quiescent and the UDVA was 20/20 (Figure 4).

DISCUSSION

Cataract is a main cause of visual disturbance following transplantation and is common in transplantation patients. The most common ocular complication following renal transplantation is posterior subcapsular cataract.
Cataracts induced by systemic steroid therapy are usually detected as a posterior subcapsular cataract. However, the exact mechanism of cataract formation due to steroid therapy is unclear. The pathogenic mechanism of steroid-induced cataract remains unclear. Several hypotheses suggest that glucocorticoids exert their effect on normal lens cellular functions by dysregulation of proliferation, differentiation, migration, or apoptosis.

It is not known whether glucocorticoids exert their effect through binding to specific glucocorticoid receptors, nonspecific glucocorticoids binding in the lens, binding to a membrane receptor, or through a metabolic effect as a result of glucocorticoids binding to a glucocorticoid receptor at another site. Glucocorticoid-receptor complex binding DNA may result in modulating the expression of target genes, affecting transcription, and modulating the expression of another gene.

Another hypothesis is that glucocorticoid exposure may disturb protective antioxidative systems in the lens by glutathione depletion levels, making the lens prone to oxidative stress, which destabilizes protein conformation, leading to cataract formation. Some studies have suggested that another mechanism of steroids is changes in growth factor production in the eye, such as fibroblast growth factor and transforming growth factor β, which are necessary for lens fiber development and growth. The effect of corticosteroids on these growth factors leads to impairment in the differentiation process, which can result in loss of lens transparency and cataract development. In the study by Petersen et al., ion imbalance in the lens, which was caused by glucocorticoids, was detected.

Corticosteroids are an essential component of most immunosuppressive regimens currently used in renal transplantation, and cyclosporine (cyclosporin A) is commonly administered in addition to immunosuppressive drugs to reduce the side effects of the steroidal components. The rate of steroid-induced cataracts increased with the combined use of cyclosporine and steroids, despite the reduction in total dose of systemic steroids. Some studies show that using cyclosporine may accelerate the development of steroid-induced cataracts. The pattern of cataracts with the use of cyclosporine is different with more atypical cataract types. On the other hand, transplantation itself increases all types of cataract.

In conclusion, renal transplantation and its related therapeutic regimen may be associated with the development of atypical forms of cataracts, such as anterior subcapsular lens opacities. Systemic intake of cyclosporine may have a modulatory role in changing the pattern of cataract formation from posterior subcapsular to anterior subcapsular by altering the lens barriers, leading to disturbed lens nutrition in the basement membrane of the anterior capsule.
nutrition and, eventually, vision-limiting lens opacities. Regular screening of visual acuity and ophthalmic examinations are recommended in renal transplant patients.

REFERENCES