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LETTER TO THE EDITOR

Prominent regression of corneal crystalline deposits in multiple myeloma after treatment with proteasome inhibitor

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Dear Editor,

Corneal crystalline deposition is a rarely reported but known ocular manifestation of multiple myeloma (MM) [1]. We have previously reported significant formation of crystalline deposits throughout all layers of the cornea, including the epithelium, stroma, and endothelium, in an MM patient by using in vivo confocal microscopy [2]. Herein, we report the subsequent clinical course of this case, in which marked regression of corneal crystalline deposits was observed after treatment with a proteasome inhibitor (PI)-based regimen.

A 75-year-old Japanese woman with corneal crystalline deposition received treatment under a diagnosis of International Staging System (ISS) stage II MM when she showed progression of anemia (hemoglobin, 8.9 g/dL) and renal dysfunction (serum creatinine, 150.3 μmol/L). Fifteen years before starting treatment, she had been diagnosed with IgG kappa-type monoclonal gammopathy of undetermined significance (MGUS), which progressed to smoldering MM (SMM) 10 years later. She was referred to the ophthalmology department because of blurry vision occurring 1 year before SMM diagnosis. Slit-lamp examinations and noncontact specular endothelial microscopy showed significant corneal crystalline depositions throughout all layers of the cornea (Fig. 1a), and the endothelium could not be clearly imaged because of the corneal opacity caused by the crystalline deposits (Fig. 1b) in both eyes. She was treated with 4 cycles of bortezomib and dexamethasone and achieved a partial response of 80% reduction in the serum M component with improvement in anemia (hemoglobin, 13.3 g/dL) and renal function (serum creatinine, 114.9 μmol/L). Although there was no remarkable change in the corneal deposits at the end of two courses of treatment, progressive regression of the deposits was observed in both eyes 4 months after therapy completion. The examination performed 1 year after the treatment showed disappearance of corneal crystalline deposits in both eyes (Fig. 1c) and a clear mosaic of corneal endothelium with very few deposits (Fig. 1d). The patient also reported a marked improvement in the blurred vision.

We report a case of remarkable reduction of crystalline deposits in the cornea after MM treatment with a PI-based regimen. The introduction of novel agents, including PIs, immunomodulatory drugs, and monoclonal antibodies, has changed MM treatment and further improved survival rates. The efficacy of these drugs on other immunoglobulin deposition diseases caused by clonal plasma cell dysplasia as well as on common MM complications such as osteolytic disease, anemia, and renal impairment has been reported [3–5]. To our knowledge, this is the first documented report of the therapeutic effect of PI on corneal deposits. Consistent with previous literature, which reported regression in response to cytotoxic chemotherapy, this case showed improvements in accordance with the hematological response [6, 7] Noncontact specular endothelial microscopy as well as standard ophthalmic slit-lamp examination revealed the resorption of corneal deposition after the treatment in our case.

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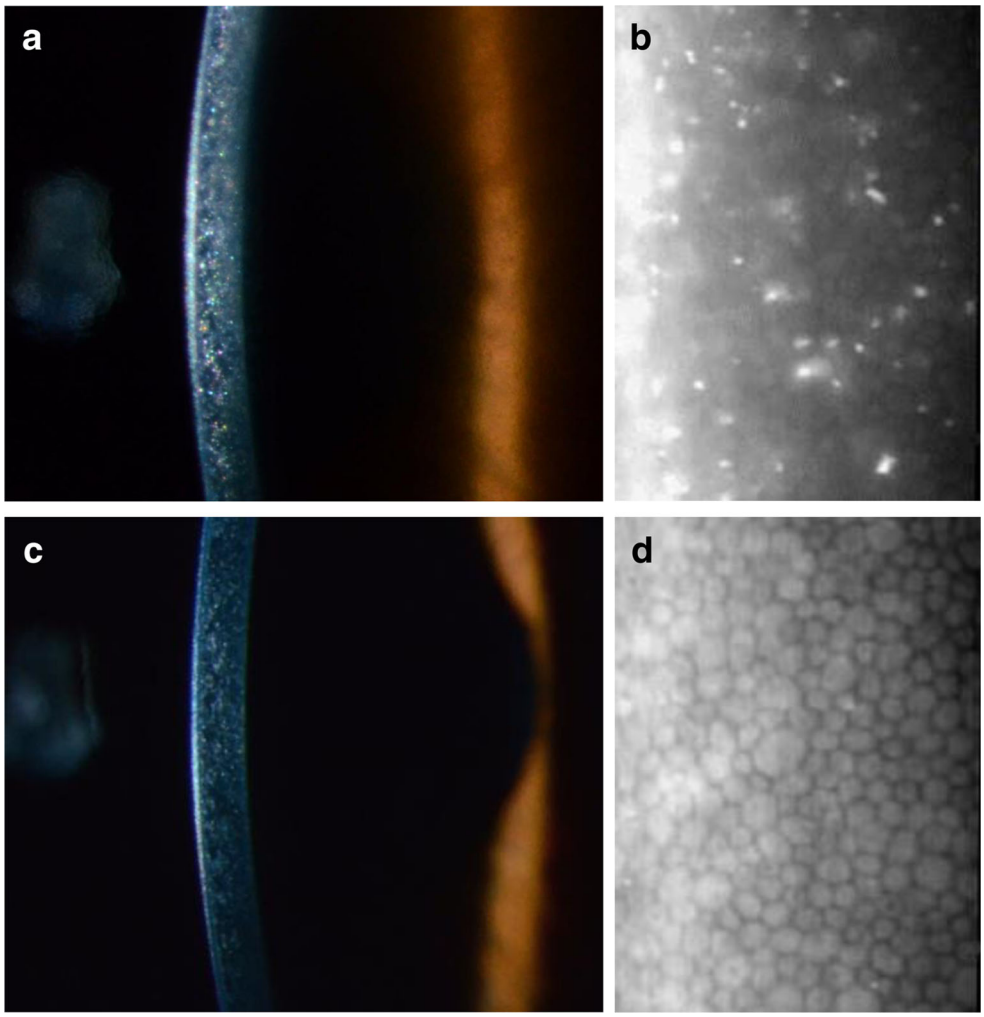

Fig. 1 Images from the right eye. The significant formation of corneal crystalline deposits throughout all layers in slit-lamp examination (**a**), and on the endothelium in noncontact specular endothelial microscopy (**b**) before the treatment for multiple myeloma. One year after the treatment, remarkable regression of the corneal deposits was observed (**c**, **d**). Both eyes showed similar findings

Authors contribution All authors contributed to patient management and to the writing of the report.

Compliance with ethical standards

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

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Written informed consent to publish personal information and case details has been obtained from the patient.

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