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Case study

Complete remission of monoclonal gammopathy with ocular and periorbital crystal storing histiocytosis and Fanconi syndrome

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Summary A 62-year-old woman presented with crystalline keratopathy, crystal-storing histiocytosis, Fanconi syndrome, and a serum monoclonal IgG-κ and urinary κ light chain. Histology and electron microscopy studies revealed the presence of crystals within macrophages in multiple eye sites, in the kidney and in the bone marrow. The variable domain of the pathogenic κ light chain related to the Vk1-39 gene that was also involved in most previously reported cases of Fanconi syndrome. Owing to the severity of the damage to the eye and a potentially poor kidney prognosis, the patient underwent autologous stem cell transplantation. After 18 months follow-up, she is in complete hematological, ophthalmological, and renal remission.

1. Introduction

Monoclonal immunoglobulin light chains (LCs) may be responsible for a variety of diseases featuring deposition of amorphous, fibrillar, or crystalline material in multiple tissues, leading to clinical complications that may require

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strong treatments of the LC-secreting tumor [1]. In relatively rare cases, the variable regions of monoclonal κ LCs resist normal degradation by proteases and accumulate inside kidney proximal epithelial cells, causing Fanconi syndrome (FS) [2]. In crystal-storing histiocytosis (CSH), Gaucher-like macrophages containing numerous immunoglobulin crystals accumulate in the bone marrow. Crystal deposition may, however, also occur in extramedullary sites such as the kidney and the cornea. Deposition in renal proximal tubular epithelium causes FS, a slowly progressive disorder featuring glycosuria, aminoaciduria, and hypophosphatemia. Immunoglobulin (Ig) LC deposition usually contributes to progressive organ damage, including renal failure.

We report a case of monoclonal gammopathy of undetermined significance (MGUS) with crystal formation and storage histiocytosis involving the kidney and eye. Early diagnosis and intensive treatment with autologous stem cell transplantation led to complete remission.

2. Case report

2.1. Clinical presentation

A 62-year-old woman was admitted to the ophthalmology department in October 2008 after a decrease in visual acuity

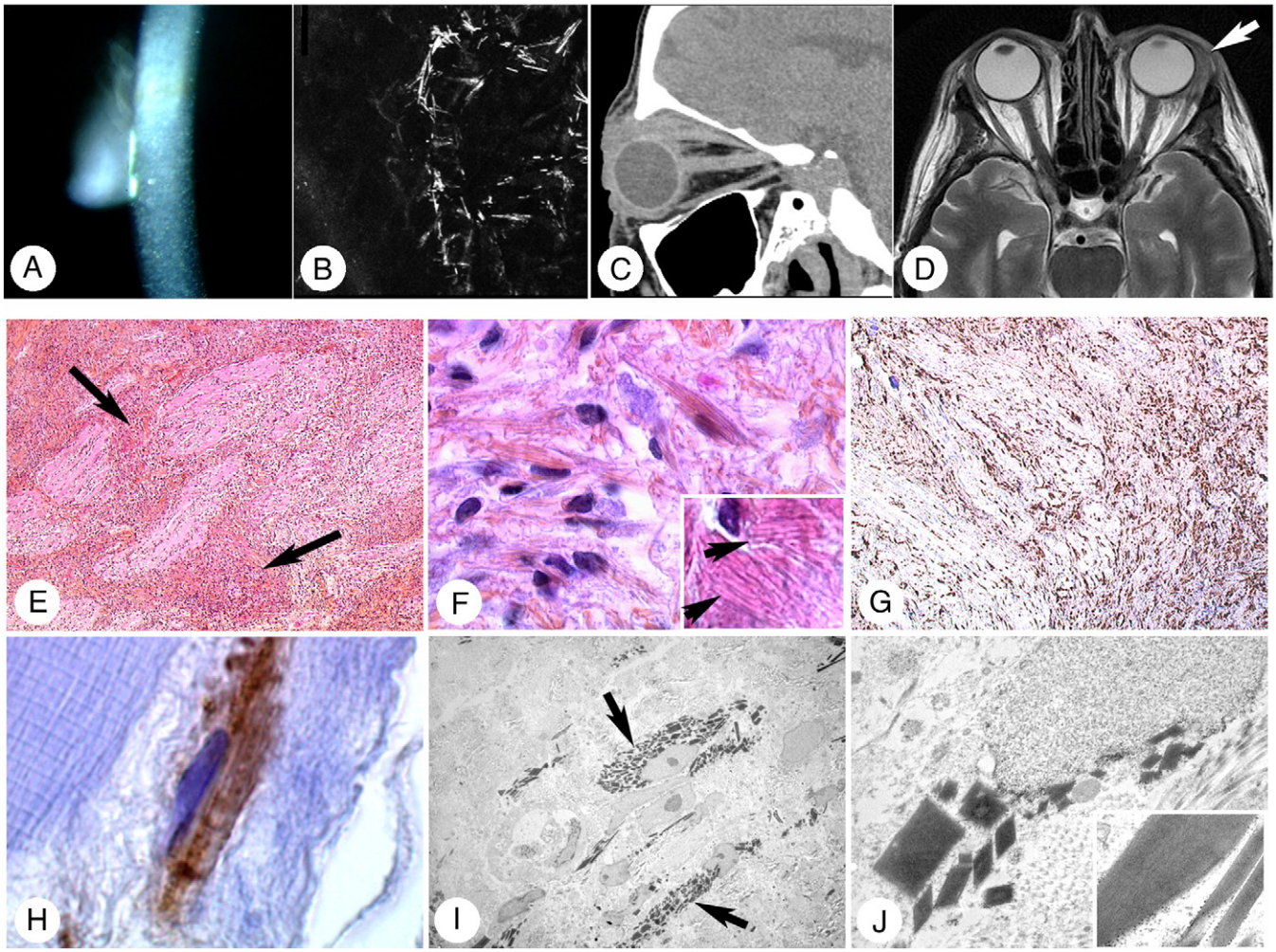

Fig. 1 A-B, Corneal pathology imaging. A, Slit-lamp examination showed diffuse, punctiform infiltrates in both the anterior and posterior corneal stroma without epithelial or endothelial abnormality. B, In vivo confocal laser scanning tomography showed the presence of multiple hyperreflective crystal inclusions located in the corneal stroma extracellular space in both eyes together with diffuse intraepithelial deposits. C-D, Left retroorbital mass imaging. C, Orbital computed tomography showed exophthalmy with palpebral and preseptal infiltration of the eye socket. D, Brain magnetic resonance image showed a space-occupying process in the superior eyelid and the peribulbar space (arrow), involving the lacrymal gland, as well as the intraconical adipocellular space surrounding the optic nerve. E-J, Retroorbital mass biopsy. E-H, Histology. E, Numerous macrophages (arrows) within dense fibrous tissue (HPS ×10). F, Intracytoplasmic crystals (needle-like) (arrows) within macrophages (HPS ×20; insert ×40). G-H, A CD68 immunostain highlighted the large numbers of macrophages (G ×10; H ×40). I-J, Electron microscopy. I-J, Electron microscopy study showed numerous crystals (needle- or square-shaped) (arrows) within cytoplasm of macrophages and an enlargement of a square-shaped crystal (J insert).