Secondary Amyloidosis Manifesting as Bilateral Blepharoedema

Hideki Maejima¹, Kouju Kamata², Kensei Katsuoka¹ and Toshihiro Matsui³
Departments of ¹Dermatology and ²Internal Medicine, Kitasato University School of Medicine, 1-15-1 Kitasato, Sagamihara, 228-8555 Kanagawa, and ³Department of Rheumatology, National Hospital Organization, Sagamihara National Hospital, Sagamihara, Japan. E-mail: hm4765@yahoo.co.jp
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Sir,
Secondary amyloidosis is an important complication of rheumatoid arthritis (RA). It is sometimes life-shortening, but it rarely produces specific skin lesions. We describe here a case of secondary amyloid A amyloidosis arising as a complication of RA and presenting bilateral blepharoedema without purpura.

CASE REPORT
A 61-year-old Japanese woman had received treatment with several agents, but not gold, for rheumatoid arthritis (RA) and severe destructive joint disease at another hospital for more than 30 years. She had had proteinuria of uncertain cause for more than 20 years. Several months prior to her current consultation, she had noticed leg oedema and body weight gain, and was diagnosed as having chronic renal failure. She was transferred to our hospital and initiated on haemodialysis for chronic renal failure; soon thereafter, the patient noticed bilateral blepharoedema without purpura (Fig. 1). A skin biopsy was performed from her eyelids. The histopathological findings showed oedema in the upper dermis and slightly eosinophilic amorphous deposits in the vessel walls, without leukocytic infiltration. Congo red and Dylon (Pagoda red) staining revealed amorphous masses of amyloid in the vessel walls, which were susceptible to oxidation treatment with potassium permanganate (Fig. 2). Immunohistochemical staining with anti-amyloid A protein (Kyodo Byori Inc. Kobe, Japan) was positive, but that with anti-β2 microglobulin (Kyodo Byori Inc. Kobe, Japan) was negative (1). Laboratory studies revealed chronic renal failure, slight increase in serum C reactive protein, increase in serum rheumatoid factor (197 IU/ml), serum anti-amyloid A protein (SAA) (112 µg/ml; normal range, < 5 IU/ml) and serum brain natriuretic peptide (1660.7 pg/dl; normal range < 8 pg/ml), slight increase in serum troponin I (0.33 ng/ml; normal range, < 0.01 ng/ml), and normal thyroid test results. The SAA was investigated using the latex method (SRL Inc., Tokyo, Japan), which has been commercially available in Japan for several years.

An electrocardiogram showed generalized low voltage and segment elevation which indicated old myocardial infarction, and echocardiography revealed a granular speckled pattern and a hypertrophic left ventricle with normal cavity size; features characteristic of amyloid cardiac involvement (2). A duodenal biopsy obtained by upper gastrointestinal endoscopy revealed amyloid deposits. The patient was diagnosed as having secondary amyloid A amyloidosis arising as a complication of RA and presenting with cardiac, renal, and cutaneous involvement without purpura.

DISCUSSION
Secondary amyloidosis is an important complication of RA and is derived from circulatory SAA. SAA synthesis and secretion by hepatocytes is mediated by the cytokines interleukin-1 and tumour necrosis factor-α (3). Skin involvement in patients with secondary amyloidosis is rare, and clinical evidence of amyloid deposition is difficult to find (4). The detection of the mass of amyloid deposition is performed using stains, including PAS methods, Congo red stain, and thioflavin T stain. Congo red stain is the most specific of these for detecting amyloid deposits; however, it sometimes gives false positive, and it is inadequate for detecting small deposits of amyloid (5). The Pagoda red method was specificity simple, practical, and can be applied routinely in the laboratory (6). Histopathological examination reveals amyloid A deposits around blood vessels in the areas of involvement (5). Amyloid deposits alter the barrier function of the endothelium and may cause injury to vessels in the deep dermis. The connective tissue in the eyelids is scant and is more delicate than in other body surface areas; therefore, amyloid deposits might have prevented capillary or microcirculation.

Fig. 1. Clinical findings at initial visit. Oedema of the eyelids without fever, tenderness or purpura was observed.
in this region, leading to bilateral blepharoequema in
the case described here, presumably by the same me-
chanism that led to abnormalities in the other organs.
The diagnosis is usually based on histopathological
examination of upper gastrointestinal or rectal biopsy
specimens (7), or deep skin biopsy specimens that can
easily and usefully reveal secondary amyloidosis in
patients with RA (8). Skin manifestations induced by
secondary amyloidosis are rare and unclear, but are
recognized as a serious problem.

REFERENCES

1. Pepys MB. Amyloid, familial Mediterranean fever, and
acute phase response. In: Doyle D, Hanks GWC, Chemn NI,
2. Falk RH, Comenzo RL, Skinner M. The systemic amyloido-
amyloid A (SAA): biochemistry, genetics and the pathoge-
In: Burns DA, Breathnach SM, Cox N, Griffith CE, editors.
Rook’s textbook of dermatology, 4th edn. Oxford: Black-
5. Yanagihara M, Mehregan AH, Mehregan DR. Staining
of amyloid with cotton dyes. Arch Dermatol 1984; 120:
1184–1185.
6. Garcia-Garcia M, Mourad G, Durfort M, Garcia-Valero J,
Argiles A. Vascular involvement and cell damage in expe-
rimental AA and clinical β2-microglobulin amyloidosis.
7. Kobayashi H, Tada S, Fuchigami T, Okuda Y, Takasugi K,
Matsumoto T, et al. Secondary amyloidosis in patients with
rheumatoid arthritis: diagnostic and prognostic value of
8. Tiitinen S, Kaarela K, Helin H, Kautiainen H, Isomäki H.
Amyloidosis-incidence and early risk factors in patients
with rheumatoid arthritis. Scand J Rheumatol 1993; 22:
158–161.