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Periorbital Purpura and Cardiac Failure in AL Amyloidosis

Takashi Isobe¹, Toshio Kimata² and Masaru Ohashi³

AL amyloidosis was found in a 61 year-old Japanese male. His chief complaint was abrupt appearance of periorbital purpura. Associated symptoms included exertional dyspnea and edema. He was then found to have macroglossia, submandibular lymphadenopathy, urinary Bence Jones protein of lambda type, plasma cell proliferations in the marrow, low voltage in the limb leads on electrocardiograms and chronic cardiac failure. Pathological diagnosis was Congo-red positive amyloid. Significance of periorbital purpura in AL amyloidosis was also discussed.

Key Words
Periorbital purpura,
BJP of lambda type,
Chronic heart failure,
AL amyloidosis.

INTRODUCTION

Amyloid, a substance appearing to be homogenous and amorphous under the light microscope, consists of aggregated fibrils (1). The fibrils are insoluble, replacing and destroying normal tissues. AL amyloidosis shows variable survivals among patients with amyloid-deposits of different organs. It has been recently investigated that cardiac amyloidosis among patients with AL amyloidosis may appear to be poorest prognosis. It is also interesting that periorbital purpura among patients with AL amyloidosis could be one of the most characteristic signs, although periorbital purpura may not be common among Japanese patients. In the present paper, a patient of 61 y.o. male is presented with full-blown clinical features of AL amyloidosis. Interestingly, periorbital purpura was the initial and chief complaint of the present case.

CASE PERSSENTATION

S.Mab. 61 y.o. Japanese male, visited the hospital with a chief complaints of purpura around bilateral periorbital area and anterior chest wall. He also had exertional dyspnea, pitting edema in lower legs, abdominal distension, and recurrently presenting constipation or diarrhea as his recently changed stool habit. On admission, the family history and his past history were not contributory. Physical examination demonstrated remarkable purpura in the periorbital area and anterior chest wall, macroglossia, submandibular lymphadenopathy and lower leg's edema.

Laboratory data of the patient disclosed abnormal findings including persistent proteinuria of 4-6 gm a day with Bence Jones protein of lambda...
type, a serum total protein 6.0 g/dl consisting of albumin 3.8, α1-grobulin 0.3, α2 0.5, β 0.5, γ 0.7 g/dl, without any monoclonal spike in the serum, serum IgG 990 mg/dl, serum IgA 100 mg/dl, serum IgM 28 mg/dl, an aspiration biopsy from the sternal bone marrow with an increase of plasma cells of 6.0% out of nucleated cells, a red blood cell count 349 X 10⁴ /μl, a hemoglobin 11.2 g/dl, a peripheral white blood cell count of 7,800 /μl consisting of stab 4%, segmented 40%, monocyte 4% and lymphocyte 52%, a platelet count 23.5 X 10³ /μl, plasma fibrinogen 275 mg/dl, prothrombin time 11.0 sec. as compared to normal control of 11.2 sec., bleeding time 3'00", clot retraction 47% (44-46% normal), GOT 33 IU/l, GPT 22 IU/l, serum alkaline phosphatase 104 IU/l, and LAP 197. A chest X-ray film revealed enlargement of cardiac silhouette, associated with pulmonary congestion bilaterally. An electrocardiogram showed low voltage in limb leads and ST depression in V₄₋₆ leads. A fluoroscopic examination showed multiple ulcers in the stomach, but no abnormality in the rectum, and no sign of hepatosplenomegaly by radioisotope scanning method. In short summary, this patient had a characteristic patterns of manifestations of (a) localized and marked purpura around the eyelids and chest wall, (b) macroglossia, (c) vascular spider on the face, (d) submandibular lymphadenopathy, (e) chronic cardiac failure with ECG abnormalities and edema in the lower legs, and (f) Bence Jones protein of lambda type in the urine, and (g) plasma cell proliferations of 6.0% out of nucleated cells in an aspirate from sternal bone marrow.

These findings gave a clue to AL amyloidosis, which was confirmed by pathology of extracellular and perivascular amyloid deposits on successive biopsied materials of the skin, tongue, submandibular tumor, stomach, and rectum. The patient was doing well at the out-patient clinic after an improvement of exertional dyspnea, with an effective diuretica superimposed on digitalization. Unfortunately, nine months after the discharge from the hospital, he died of sudden cardiac arrest at home. Autopsy could not be obtained.

**DISCUSSION**

Among various types of amyloidosis, AL amyloidosis is associated with plasma cell proliferations and monoclonal type immunoglobulin production (1 ~ 5). "AL" represents amyloid of light chain of immunoglobulin. Its association with urinary Bence Jones protein particularly lambda type Bence Jones proteinuria has been emphasized in the literature (1 ~ 3). High incidence of Bence Jones proteinuria is seen in Western countries and among Orientals, although the incidence of myeloma and AL-amyloidosis is less common in Oriental countries. Clinical findings may strongly suggest the clue to the biopsy which eventually leads us to the diagnosis. Kyle and Bayrd (5) reviewed 236 cases of amyloidosis, among which 132 cases (56%) of primary amyloidosis and 61 cases (26%) of myeloma associated amyloidosis. Other 43 of 236 cases were classified into localized, secondary and familial types of amyloidosis. Primary amyloidosis and "amy-
Amyloidosis with myeloma occurred more often in men (both 63 and 56%, respectively) than in women. The mean age was 61 years, which was virtually identical to that of 869 patients having myeloma observed by Kyle. The most common presenting symptoms were fatigue, weight loss, dyspnea, paresthesia, leg's pitting edema and light-headache. Weight loss was a feature in more than one-half of the patients (5). The principal initial physical findings in Kyle's series included cutaneous abnormalities and enlargement of the liver, spleen, and tongue. The liver was palpable in almost 50% of his patients. Splenomegaly was an initial finding in less than 10% of the patients.

Macroglossia can be extremely impressive, but this was a feature in only 26% of primary type and 12% of myeloma–associated type. Purpura is not infrequent and often involves the face and neck, particularly the upper eyelids. Purpura of the eyelids after pinching is a characteristic sign of amyloidosis. Periorbital purpura may usually be striking, after vomiting, coughing, or Valsalva maneuver of proctoscopy, since skin lesions of amyloid is fragile. The carpal tunnel syndrome, the nephrotic syndrome, congestive heart failure, sprue, peripheral neuropathy, and orthostatic hypotension all constitute syndromes that are common in amyloidosis. In AL amyloidosis, lymphadenopathy of submandibular lesions are occasionally seen (5).

Comparing the clinical findings of the present case to those described in Kyle's review and incidence which is one of the largest number of AL patients, it is recognized that the present case is prototypic type of AL, i.e., combination of periorbital purpura, macroglossia, submandibular lymphadenopathy, and edema. Additional confirmation of the presence of Bence Jones protein lambda type (2), plasma cell proliferations in the marrow.
Figure 3. An immunoelectrophoresis demonstrating definite precipitation of Bence Jones protein of Lambda type, reacted with anti lambda.

Figure 4. Periorbital purpura characteristic of AL amyloidosis.

(1-3), and low voltage in ECG (1,4) in the present case could suggest the amyloidosis of AL type even before the biopsy. From the author's experience on 120 cases with AL amyloidosis in Japan, there were many cases in association with macroglossia, cardiomegaly, cardiac insufficiency, ECG abnormality and Bence Jones proteinuria. However, the occurrence of periorbital purpura has not be encountered except in the present case. As to purpura (not described as periorbital purpura) in Kyle series incidence of 17% in primary type out of 132 cases and 15% in myeloma-associated type out of 61 cases were recorded. It is worthy of pursuit if the incidence of periorbital purpura may show some difference of AL cases between Western countries and Oriental countries including Japan.

Figure 5. A demonstration of fragile skin, producing purpura instantly by rubbing on the skin with patient's own hand.

Figure 6. Perivascular deposits of amyloid material around the small vessels, with narrowing lumen and probable result of malnutrition or poor circulation to the regional tissue. H-E stain. x 400.
REFERENCES