

## Treatment of Panniculitis Associated with Alpha-1-Antitrypsin Deficiency with Alpha-1-Protease Inhibitor

Trine Kjus, Claus Lützow-Holm and Ole B. Christensen

Department of Dermatology, Ullevaal University Hospital, NO-0407 Oslo, Norway. E-mail: ole.christensen@uus.no

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Sir,

Alpha-1-antitrypsin (AT) is the major protease inhibitor in serum and prevents damaging effects of enzymes released from mainly macrophages and neutrophil granulocytes. AT deficiency is an autosomal recessive disease associated mainly with early onset emphysema and hepatic disorders. We report septal panniculitis in a 21-year-old woman with homozygous AT deficiency type Pi ZZ. Her panniculitis responded poorly to dapsone and doxycycline treatment, but was successfully treated with intravenous infusion of protease inhibitor.

### CASE REPORT

A 21-year-old Caucasian woman was admitted to our department with a one-month-long history of tender erythematous dermal nodules on the upper aspects of her extremities and back. On examination, the nodules in the right groin and left shoulder had ulcerated draining yellow, oily fluid. Later she developed similar ulcerating lesions in other locations (Fig. 1). The lesions healed with dyspigmented scarring (Fig. 2). There was no history of trauma or infection and she was otherwise feeling well.

AT deficiency had been diagnosed when she was only a few weeks old because of neonatal hepatitis. Her serum AT concentration was 0.3 g/l (normal 1.0–1.7 g/l), phenotype Pi ZZ. Bacterial specimens from a suppurating lesion in the groin revealed no growth of (aerobic or anaerobic) bacteria. Normal laboratory tests included ESR, complete



Fig. 1. Nodular infiltrates on the upper back with secretion of oily fluid.



Fig. 2. Postinflammatory dyspigmented scarring on the back.

blood cell count with differential count, platelets, haemoglobin, liver enzymes, creatinine, CRP, ANA, C-ANCA, P-ANCA, anti-PR3 and anti-MPO. Chest X-ray was normal. Histopathological examination revealed septal panniculitis with heavy infiltration of polymorphonucleated leucocytes (typically in accordance with AT deficiency).

The patient was initially treated with prednisolone with a starting dose of 50 mg orally daily for a few days without any effect and therefore the drug was tapered within a couple of weeks. Dapsone 100 mg was added for 2 weeks but because of insufficient effect it was increased to 150 mg daily. A week later she developed blue lips, dizziness and tachycardia, and dapsone was reduced to 100 mg daily. Haemoglobin was reduced from 13.1 to 8.7 g/100 ml and dapsone was further reduced to 50 mg daily and doxycycline 200 mg daily was added. This regimen was discontinued after 3 months because of unsatisfactory effect. The patient was then treated with  $\alpha$ -1-protease inhibitor (Prolastin, Cutter Biological, Berkeley, Calif., USA) prepared from pooled human plasma at a dose of 4 g i.v. (60 mg/kg body weight) once a week. All the lesions resolved within 2 days after receiving the first dose. She was then given infusions for 8 weeks without new lesions developing. Thereafter, she received  $\alpha$ -1-protease inhibitor when new lesions appeared, usually after 2 to 4 weeks, for the following 5 months. The new lesions

disappeared 1–2 days after the infusion and healed without scarring. Then disease activity increased again for the following 3 months. In this period she had an induced abortion and experienced severe psychological and social stress. During the past 5 months the disease activity is considerably reduced and at present she receives infusions approximately every 4th week.

## DISCUSSION

AT is a glycoprotein that is synthesized in the liver and is the principal protease inhibitor in serum. Even if AT deficiency is mostly known as a cause of early onset emphysema, other organ systems may also be affected and there is a broad spectrum of diseases like hepatitis, cirrhosis, pancreatic disease and panniculitis. Panniculitis associated with AT deficiency was first described by Warter et al. (1). The clinical picture and histopathological features as described in the present case are typical for panniculitis associated with AT deficiency (2).

Dapsone is the treatment of choice (3) and is possibly effective because it interferes with myeloperoxidase, which inhibits AT (4). Doxycycline is also reported to be effective in some cases of AT deficiency associated panniculitis, probably mainly because of its anticollagenase properties. (4) Our patient did not respond satisfactorily to either dapsone alone or the combination of dapsone and doxycycline, which she received for 3 months. She was therefore treated with  $\alpha$ -1-protease inhibitor (Prolastin<sup>®</sup>) with excellent results on her panniculitis.  $\alpha$ -1-protease inhibitor is reported to be the likely best approach in the treatment of severe and acute skin diseases associated with AT deficiency and should be instituted when the above-mentioned treatment modalities do not work. Naturally, the cost of  $\alpha$ -1-protease inhibitor is a matter of concern, but at present there is no other available effective treatment for this devastating condition in a young female.

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