Acute myeloid leukaemia in a patient with congenital antithrombin III deficiency

Congenital antithrombin III deficiency is well recognised as a rare cause of venous thrombosis. The occurrence of acute myeloid leukaemia in a patient with congenital antithrombin III deficiency has not previously been reported.

A 45 year old woman presented in July 1982 with a five week history of tiredness, spontaneous bruising, and gingival swelling. She had a history of postoperative venous thrombosis on two occasions and a striking family history of thrombotic disease: her father and paternal uncle had had major thrombotic episodes while in their twenties. The maternal side of the family was unaffected.

At presentation fever (39°C), pallor, and widespread bruising were noted, but no splenomegaly or lymphadenopathy. Hepatosplenomegaly and generalized tenderness was found. Haemoglobin concentration was 10.0 g/dl, white cell count 5.5 x 10^9/l, and platelet count 290 x 10^9/l. Blood film showed 95% blasts. Histology and cytochemistry of bone marrow aspirate led to a diagnosis of acute myeloid leukaemia (M1). Chemothrapy, comprising daunorubicin, cytosine arabinoside, and thioguanine (DAT) was started. After the first pulse of chemotherapy, blast cells were no longer apparent in the peripheral blood and the course was uneventful. Eighteen days after admission sudden severe pleuritic chest pain developed, and there was pain in the right calf. Electrocardiogram was normal, but chest x ray examination showed opacification of left upper and right lower zones, an elevated right hemidiaphragm, and a small right sided pleural effusion. Pulmonary embolism was diagnosed, although the patient was unfit for isotonic scan. There was no evidence of disseminated intravascular coagulation (DIC). Coagulation screening. Heparin by continuous intravenous infusion was cautiously instituted in a dosage of 10 000 IU every 12 h in view of the pronounced thrombocytopenia, and monitored according to the partial thromboplastin time with kaolin. Platelet concentrates were given every 12 h throughout this period.

Despite these measures the patient developed recurrent chest pain and haemoptysis with subsequent hypotension and acute renal failure, and she died three days after admission. Necropsy revealed multiple small and medium sized pulmonary emboli, bilateral pulmonary infarcts, and multiple thrombi in the calf areas of the right leg.

An amidolytic antithrombin III assay performed on a blood sample taken before heparinisation using a commercially available chromogenic substrate (Kabi S 224) showed a substantial reduction in antithrombin III at 43% (normal range 80-115%). Samples taken later from the patient's mother showed normal antithrombin III levels (90%). No other relatives were available for study.

Acquired antithrombin III deficiency can occur as a result of disseminated intravascular coagulation in a number of conditions. The absence of disseminated intravascular coagulation in this case together with the striking past and family history of thrombosis strongly supported a diagnosis of congenital antithrombin III deficiency.

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**References**


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**Laser microprobe mass spectrum**

Originating from one of the aluminum negative bone marrow macrophages of patient A. The brown colour of these cells suggested considerable iron storage.