

Acute Febrile Neutrophilic Dermatitis and Abnormal Bone Marrow Chromosomes as a Marker for Preleukemia

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Acute febrile neutrophilic dermatitis or Sweet's syndrome is a rare disease, which occasionally is seen in patients with myeloid leukemia. We present a case of Sweet's syndrome in a patient with an abnormal chromosome pattern in bone marrow aspirate. Initially the patient had flu-like symptoms with high fever. Two weeks later raised, erythematous and painful plaques appeared on the skin. Various antibiotics were ineffective, but the symptoms vanished after administration of prednisone. Six months later a fulminant acute myeloid leukemia developed, the course of which was complicated by a fatal subdural bleeding. It is concluded that Sweet's syndrome may be a cutaneous sign of a neoplastic myeloid proliferation and that a complete hematological examination including chromosome analysis is mandatory in these patients. *Key words: Myeloid leukemia; Sweet's syndrome; Chromosome analysis; Legionella.* (Received June 27, 1984.)

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Acute Febrile Neutrophilic Dermatitis or Sweet's syndrome was primarily described in 1964 (1) and is characterized by raised, painful and erythematous skin plaques, fever, elevated sedimentation rate and a neutrophilic leucocytosis. Histologically a dense perivascular infiltrate of neutrophils is seen in the dermis. Over 100 cases of Sweet's syndrome have been published in the world literature and to our knowledge 20 cases of Sweet's syndrome associated with leukemia.

We present a patient with Sweet's syndrome, where bone marrow chromosome analysis demonstrated hypodiploid clonal abnormalities indicating malignancy. Half a year later the patient developed acute myeloid leukemia.

CASE REPORT

A 62-year-old woman, who in 1953 underwent hysterectomy for a non-classified cervical ulcer, but was otherwise healthy, got flu-like symptoms in March, 1983, with temperature between 39–40°C, cough, myalgia and arthralgia. Two weeks later raised, painful and erythematous plaques and petechial lesions appeared on the skin of the upper arm, later spreading to the trunk, thighs and crura. Hemoglobin was low, the erythrocyte sedimentation rate was considerably elevated (142 mm/h) and the thrombocyte count was decreased ($35\text{--}47 \times 10^9/l$). Peripheral white blood cell count was normal and no immature cells were seen. At first the bone marrow was slightly hyperplastic with a normal erythropoiesis, but showed a myelopoiesis slightly displaced to the left. No leukemic cells were seen. The bone marrow remained unchanged in repeated examinations. After five months the histology changed to acute myeloid leukemia with a submaximal hyperplastic marrow containing 25% myeloblasts and a total maturation stop. Chest X-ray showed an infiltrate in the central and basal part of the right lung. Blood titers for *Legionella* showed a 7-fold rise in two weeks, respiratory syncytial virus were constantly elevated. Serological investigations for influenza A and B virus, adenovirus and parainfluenza I virus, mycoplasma pneumoniae as well as coldagglutinin were negative. Several routine blood and urine cultures were negative. Chromosome analysis on bone marrow were carried out on aspirate prepared by a direct method without culture of the cells. Twenty cells were analyzed, 10 cells were conventionally Giemsa-stained and 10 trypsin Leishman-banded (2). All mitoses analyzed demonstrated hypodiploid clonal abnormalities. The karyotype of the clone was complex. All cells contained 45 chromosomes, decreased length of the long arms of one X-chromosome and of the long arms of one chromosome no. 18, increased length of the long arms of one chromosome no. 3, missing chromosome no. 4, 5, 8, 10 and 13 and four different marker chromosomes. Expressed according to the ISCN nomenclature (3): $45,XXq-, .3q+, -4, -5, -8, -10, -13.18q-, +mar_1, +mar_2, +mar_3, +mar_4$. No Philadelphia chromosome was seen.

Skin biopsy showed an unaffected epidermis and a diffuse cellular infiltrate in the mid-dermis composed mainly of granulocytes and nuclear dust with an admixture of lymphocytes and histiocytes. The vessel walls were preserved and fibrinoid material or bacteria were not present. Prednisone (30 mg per day) treatment was instituted with a dramatic effect on the fever, malaise and the skin lesions. The body temperature rose and painful erythematous skin plaques relapsed at the same sites as previously when the prednisone treatment was discontinued. Antibiotic therapy (penicillin and erythromycin) had no effect on the symptoms. When bone marrow examinations showed acute myeloid leukemia, the patient received cytostatic treatment but 14 days later she died after a subdural bleeding.

DISCUSSION

Apart from the lack of leukocytosis, which has been seen in other cases of Sweet's syndrome associated with leukemia (4), the present case fulfills the criteria of Sweet's syndrome.

The etiology of Sweet's syndrome is still unknown but there is frequently an association with neoplastic changes of the bone marrow and in one case with a benign hyperplastic change of the bone marrow (5). The occurrence of clonal abnormalities in the bone marrow aspirate is an indication of malignancy or premalignancy and it may establish an etiological relationship between a myeloid disorder and Sweet's syndrome. In the present case Sweet's syndrome was preceded by a *Legionella* infection. However, to our knowledge there has been no previous reports of *Legionella* infections causing Sweet's syndrome or myeloproliferative disorders.

As quite a number of patients with Sweet's syndrome have or will develop myeloid leukemia, we suggest that Sweet's syndrome is regarded as a skin marker of a hematological malignancy. It is advisable to perform a complete hematological examination including chromosome analysis in all patients with Sweet's syndrome.

REFERENCES

1. Sweet RD. Acute febrile neutrophilic dermatosis. *Br J Dermatol* 1964; 76: 349-356.
2. Philip P. Trisomy 8 in acute myeloid leukaemia. *Scand J Haematol* 1975; 14: 140-147.
3. ISCN (1978): An International System for Human Cytogenetic Nomenclature (1978). *Cytogenet Cell Genet* 1978; 21: 309-404.
4. Söderström RM. Sweet's syndrome and acute myelogenous leukemia: a case report and review of literature. *Cutis* 1981; 28: 255-260.
5. Dymock RB, van Deth AG, Parry WDH. Acute febrile neutrophilic dermatosis (Sweet's syndrome) with myeloid proliferation. *Austr J Dermatol* 1978; 19: 24-27.