Short Communications

Chronic Myelogenous Leukemia With an Unusual Karyotype

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The observation that in chronic myelogenous leukemia (CML) the deleted material of chromosome 22 is translocated onto the long arm of chromosome 9 (Rowley, 1973) has been confirmed as a consistent abnormality, but examples of translocation to other sites have been cited (for references see Lawler, 1977). It seems that the site of attachment of the deleted material of chromosome 22 does not affect the course of the disease, but more cases with unusual translocations must be studied before this assertion is confirmed.

Among 20 cases of Ph'-positive CML studied with the aid of the G-banding technique, we found two cases with unusual translocations of the deleted material of chromosome 22.

Case 1
The patient, a female 70 years old, was admitted to the Hospital in February 1977 because of fatigue. On admission, hematologic studies revealed PCV 31%, WBC $160 \times 10^9$/liter, and platelets $200 \times 10^9$/liter. Bone marrow aspirates showed a picture typical of CML. The spleen was enlarged 4 cm below the left costal margin. Examination of a chromosome preparation from bone marrow cells by the G-banding technique, as described elsewhere (Panani et al., 1977), showed that in a large proportion of cells the long arm of chromosome 22 was translocated onto the long arm of chromosome 17 (Fig. 1). No changes of chromosome 9 were observed. Chromosome study of phytohemagglutinin (PHA)-stimulated peripheral blood lymphocyte cultures showed a normal karyotype. Treatment with busulfan for 8 months was unsuccessful. Hydroxyurea was subsequently given, with an unsatisfactory result. The spleen has slightly decreased in size and the WBC is still raised.

Case 2
The patient, a male 50 years old, was admitted to the Hospital in June 1977. On admission, hematologic studies revealed PCV 30%, WBC $130 \times 10^9$/liter, and platelets $220 \times 10^9$/liter. The

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spleen was enlarged 3 cm below the left costal margin. Bone marrow aspirates showed a picture typical of CML. Examination of a chromosome preparation from bone marrow cells by the G-banding technique revealed that the case was Ph'-positive, with the deleted material of chromosome 22 translocated onto the long arm of chromosome 16 (Fig. 2). Peripheral blood lymphocyte cultures stimulated with PHA showed a normal karyotype. The patient responded to busulfan treatment and did well for 7 months until January 1978, when a blastic crisis developed. At that time the WBC was $64 \times 10^9$/liter with 57% blasts and the platelet count was $1,300 \times 10^9$/liter. Bone marrow aspirates confirmed a blastic crisis of CML. Chromosome preparation from the peripheral blood cultivated without PHA showed a karyotype similar to the initial one, without additional changes. The patient has since been treated with (a) prednisone + vincristine, (b) rubidomycin + cytosine arabinoside, and (c) hydroxyurea. He is still alive 8 months after the onset of the blastic crisis, with a palpable spleen and leukocytosis with >50% blasts.

Matsunaga et al. (1976) have published a case of Ph'-positive CML with a translocation similar to that described in our case 1. The translocation observed in our case 2 is a new type involving chromosomes 16 and 22, which has not been described in the literature before.