PREVALENCE OF ANTITHROMBIN III DEFICIENCY IN BLOOD DONORS SELECTED FOR PERSONAL OR FAMILIAL HISTORY OF VENOUS THROMBOSIS

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Reduced levels of antithrombin III (ATIII), a major inhibitor of blood coagulation, are associated with an increased risk of venous thrombosis both in congenital and acquired conditions. Since the first report by Egeberg, more than 100 families with inherited ATIII deficiency and thrombosis have been reported all over the world. However, the prevalence of the defect in various populations and among patients with thromboembolism is unknown. On the basis of his own experience, Rosenberg estimated that it accounts for about 2% of thromboembolism cases. Ødegård et al. measured ATIII levels in 480 subjects randomly selected from 5,000 factory workers in Norway and found only one person affected by the disease. Acquired ATIII deficiency is considered to be a major risk factor for thrombosis in some disorders, such as nephrotic syndrome. Low levels of the inhibitor are common also in chronic liver failure, but the possible prothrombotic effect is discussed, due to the concomitant reduction of procoagulant factors usually associated with hepatocellular damage.

In this study an Italian population of blood donors was investigated in order to obtain informations on the prevalence of inherited and acquired ATIII deficiency.

MATERIALS AND METHODS

The selection of blood donors was based on established criteria defining good health; 10,332 blood donors were asked about their personal or familial history of superficial thrombophlebitis, deep vein thrombosis and pulmonary

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PREVALENCE OF ATIII DEFICIENCY IN BLOOD DONORS

embolism. In case of positive anamnesis in the propositus or in at least one of the family members, citrated platelet-poor plasma was obtained by standard procedures and stored at −80 °C (for about one week) until assayed. Functional ATIII was measured according to the method of ABILDGAARD et al.1 using an automatic analyzer (Multistat III, reagents from Kabi Diagnostica). The normal range was defined as the mean value ± 3 standard deviations. According to these criteria, the lower normal limit determined in 100 healthy volunteers was 85%. Donors with ATIII levels below the normal limit were studied on at least three different occasions. Routine coagulation assays and liver function tests included transaminases, γ-glutamyltranspeptidase, cholinesterase and serum electrophoresis. Family studies were also performed in order to establish the congenital or acquired origin of the defect. The design of the study is illustrated in fig. 1.

RESULTS

Out of 10,332 blood donors, 692 (6.7%) were considered to have a personal or familial history positive for venous thrombosis. In 3 of them (0.43%) abnormally low levels of ATIII were found. None of the 16 family members investigated in the three kindreds showed reduced ATIII levels, although some

Fig. 1 - Design of the study.