HEREDITARY ANTITHROMBIN III DEFICIENCY. EVIDENCE OF INCREASED THROMBIN FORMATION IN THE EARLY STAGE OF HEMOSTASIS. F. Josso, M.H. Aurousseau, A.M. Fischer, M.D. Dautzenberg and S. Beguin. Department of Hematology, University Hospital Necker-Enfants Malades, Paris, France.

High incidence of thromboembolism is observed in families with antithrombin III deficiency, despite the rather moderate defect (25 to 50 per cent) observed in the affected subjects, considered as asymptomatic for the disease. The mechanism by which such a mild deficiency may promote thrombosis still remains unknown.

A new family with antithrombin III deficiency is reported, including three affected generations. Three young male adults of a same sibship died from massive pulmonary embolism aged from 22 to 28 years. In four living members of the family, three of which had antecedents of thrombophlebitis, antithrombin III level was close to 50 per cent by all assay methods used. Electrophoretic and immunochemical studies failed to demonstrate any qualitative defect of the antithrombin III molecule.

In these patients the only abnormalities of hemostasis lied in the early stage of the hemostatic pathway. In vitro, thrombin formation occurred very rapidly after initiation of coagulation, as demonstrated by the kinetics of thrombin generation and factors V and VIII activation. In vivo, factors V and VIII were activated during bleeding much more rapidly than in controls and this activation was not suppressed by low doses of heparin (10 u./kg) as in the controls.

These findings indicate that antithrombin III acts chiefly in the regulation balance of the early stages of hemostasis and thrombosis.

THE LYSIS OF EARLY FIBRIN BY EOSINOPHILS. Hau C. Kwaan and Ali A. Hatem. Northwestern University Medical School and the Veterans Administration Lakeside Hospital, Chicago, Illinois.

This study examines the role of leukocytes within a thrombus by demonstrating the morphologic detail of their activities, the chemotactic properties of thrombi and the presence of plasminogen and possible plasminogen activator within eosinophils. A model which produces discrete, reproducible platelet thrombi in arteries and veins of dogs allowed timed studies of their early evolution. In this model, the growth of the thrombus was constantly monitored by a flowmeter and the thrombus could thus be removed at a selected period in its formation. It was then studied histologically for fibrin activity and also ultrastructurally. Little fibrinolytic activity was found. In contrast to neutrophils which are concerned particularly with the phagocytosis and disruption of platelet aggregates, we observed that eosinophils participate in the lysis and disruption of the fibrin within these aggregates. The fibrin is rarely phagocytosed but is acted on at the surfaces of the eosinophils, usually in shallow invaginations of the cell membranes. The fibrin shows morphologic changes of lysis. It appears that eosinophils and neutrophils are concerned with the transformation of the early fibrin and platelet thrombus, rather than with the resolution of the formed, mainly fibrin and red cell thrombus.

DISSEMINATED INTRAVASCULAR COAGULATION AND IRRADIATION. T. Wronowski, Z. Tyrankiewicz, J. Muszkowska and M. Kopeć. Department of Radiobiology and Health Protection Institute of Nuclear Research, Warsaw, and School of Medicine, Gdańsk, Poland.

Studies of a group of 20 women treated for uterine cervix carcinoma with radium and ^{60}Co revealed that in about two-thirds of patients fibrinogen degradation products (FDP) appeared in urine and considerably increased in serum after the therapy. Under the conditions of the treatment kidneys were exposed to only negligible doses of radiation. In order to elucidate the observed phenomenon further, more detailed studies were performed on dogs. Four doses of 600 R of X-rays were given at two-days intervals either to the anterior or posterior part of the body. Irradiation resulted in a pronounced increase of serum FDP and appearance of FDP in urine which occurred after the second dose. The highest values were gradually attained during the overt postirradiation sickness. These changes appeared independently of whether the front or back part of the body was shielded. The character and dynamics of changes were similar also in cases of fractionated local irradiation of either upper thorax or kidney region. Again there was no significant difference between the two groups irrespectively of the region exposed. Results of other coagulation tests and histological examination indicate that irradiation induced systemic activation of blood coagulation. Kidneys appear to be involved in this process in an indirect way.