

Thursday, July 16, 1981

Poster Presentations

Coagulation – XV

Factors VIII, IX and X, Antibodies

11:00–12:30 h

Simcoe Room Boards 149–160

0681

FACTOR VIII RELATED ACTIVITIES IN VARIOUS SPECIES
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VIII coagulant antigen (VIII:CAg) and VIII related antigen (VIII:Ag) have been studied in various species using citrated plasma obtained from animals at the London Zoological Society Gardens.

VIII:CAg was measured by a one-site fluid phase immunoradiometric assay using an antibody to factor VIII arising in a patient with haemophilia. Fab' fragments were prepared and labelled with ^{125}I . A pool of 20 normal human plasmas was used as the standard. Three dilutions of each citrated animal plasma were tested in this assay. Bound antibody was separated from free by precipitation at 38% saturated ammonium sulphate (SAS).

VIII:Ag was measured by a similar one-site fluid phase immunoradiometric assay utilising a rabbit anti-human VIII:Ag antibody (Behring). IgG purified from this antibody was labelled with ^{125}I and free antibody was separated at 25% SAS.

All the animals tested who had cross-reacting material present showed parallel dose response curves in the VIII:CAg assay - All species of monkeys had VIII:CAg levels within the normal human range (50-200 u/dl). Other mammals had detectable but lower levels - 8-47 u/dl with the exception of Guinea pig which had 111 u/dl. No detectable VIII:CAg was present in wild boar, red deer, goat, guanaco, onager or chicken plasma.

VIII:Ag activity was present in all animals tested except ferret and chicken, although in all cases the assay curves were non-parallel to the human standard plasma. The slopes of these curves were calculated and compared to the human plasma slope. As with VIII:CAg the closest values are seen in monkeys and apes.

Chicken plasma has no VIII:CAg or VIII:Ag and this or another avian plasma may be suitable for use as a carrier in immunoradiometric assays of human coagulation factors.

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DEVELOPMENT OF BLOOD COAGULATION-A FETAL LAMB MODEL. C.T. Kisker, J.E. Robillard, and W.R. Clarke. Departments of Pediatrics and Preventive Medicine, School of Medicine, University of Iowa, Iowa City, Iowa, U.S.A.

To study the normal development of blood coagulation factor activities in a growing fetus while avoiding the effects of labor and delivery, a chronic fetal lamb model was developed in which serial blood samples were obtained from 10 chronically catheterized fetuses during the third trimester of pregnancy and 24 hours following spontaneous delivery of live-born lambs. Under operating room conditions with sterile technique, a polyethylene catheter to which heparin had been bound to both internal and external surfaces, was inserted into the femoral artery of the fetus. The catheter was brought out through a skin pouch to the side of the ewe, and enclosed in a zip lock bag. Blood samples were withdrawn from the catheter three times each week for measurement of coagulation factor activities. Levels of coagulation factor activities at birth in noncatheterized animals were not different from those found in catheterized animals except for factor IX activity which was 12% higher in the catheterized animals ($0.02 < p < 0.05$). Fibrin/fibrinogen degradation products and fibrin monomer levels were not increased during gestation and the shape of the changes in activity of individual clotting factors over time in the different fetuses was remarkably constant for each of the factors measured. Fibrinogen, prothrombin, and factor VII showed a decrease in activity early in the third trimester of pregnancy, whereas factors V, VIII, IX, X, XI, XII, and XIII showed a gradual increase in activity throughout the last trimester of pregnancy. Both factors VIII and IX showed a significant increase in activity (23% factor VIII and 12% factor IX) associated with the process of delivery. Changes in blood coagulation in the fetal lamb were similar to those thought to occur in humans. Similarities included fibrinogen, factors V and VIII which reached or exceeded adult levels at birth and the vitamin-K dependent factors II, VII, IX and X which remained below adult levels at term.