HEMOSTATIC FACTOR CONSUMPTION IN TUMOR DOGS AND RESPONSE TO PLATELET FUNCTION INHIBITORS. S.J. Slichter, P. Weiden and R. Storb. Puget Sound Blood Center and Department of Medicine, University of Washington School of Medicine, Seattle, Washington, U.S.A.

Twenty dogs with a variety of untreated naturally occurring tumors [lymphoma (6), soft tissue sarcoma (6), adenocarcinoma of the prostate (2), mast cell tumor (2), malignant melanoma (2), osteogenic sarcoma (1) and intraductal breast CA (1)] had ^{51}Cr labeled platelet and ^{125}I fibrinogen survivals measured to determine the effects of malignancy on the hemostatic mechanism. Seven dogs with limited tumors had platelet survivals of $5.5 \text{ days} \pm 0.6$ (normal $5.6 \text{ days} \pm 0.6$) and fibrinogen survivals of $2.9 \text{ days} \pm 0.5$ (normal $2.7 \text{ days} \pm 0.4$). In three dogs who died of extensive disease, platelet survivals averaged $1.8 \text{ days} \pm 0.6$ and fibrinogen survivals $1.2 \text{ days} \pm 0.8$. Platelet and fibrinogen turnovers were both $2.5 \times$ normal. In 10 dogs with intermediate disease who lived long enough to be studied serially, baseline platelet survivals averaged $2.8 \text{ days} \pm 1.4$ and fibrinogen survivals $2.5 \text{ days} \pm 0.6$. Since platelet survivals were disproportionately reduced in this group, antiplatelet drugs were given (dipyridamole, SH 1117 or RA 233). Repeat studies showed a prolongation of platelet survival in 5 of 10 animals studied ($4.0 \text{ days} \pm 1.0$). Responders were 3/5 sarcomas, 1/4 lymphomas and 1/1 adenocarcinoma of the prostate. These data suggest that consumption of clotting factors is related to the extent of the underlying malignancy and response to platelet function inhibitors is governed by the type of malignancy. Since platelet and fibrinogen consumption have similarly been found in metastatic human tumors (Ann. NY Acad. Sci. 230:252, 1974), this animal model may represent an opportunity to explore the value of antithrombotic therapy in maintaining hemostatic factors and preventing thromboembolic complications.

DEFECTIVE RETICULOENDOTHELIAL CLEARANCE OF PLATELETS AFTER WHOLE BODY TRAUMA. John E. Kaplan and Thomas M. Saba. Department of Physiology, Albany Medical College, Albany, New York, U.S.A.

Platelet microembolization has been suggested to result in microcirculatory and organ damage, especially pulmonary dysfunction, following trauma and shock. It is hypothesized that, in addition to increased platelet adhesiveness and aggregability, post-traumatic reticuloendothelial depression predisposes to microembolization by failure to clear altered platelets from the circulation. The present study evaluated the short term (1 hr) clearance and organ localization of radiolabelled homologous platelets in normal rats and rats following sublethal Noble-Collip drum trauma. After preparation of citrated platelet rich plasma from normal rats, platelets were collected and labelled with ^{51}Cr in citrated saline. Platelets were injected IV (2 mg protein/100 g BW) and radioactivity determined in serial 100 μl blood samples and in the liver, lung and spleen at 60 min. Platelet disappearance conformed to a 2 compartment exponential clearance. Velocity of clearance in the most rapid compartment correlated ($r=0.93$) with hepatic platelet localization while velocity of the second compartment correlated ($r=0.91$) with splenic platelet localization. Clearance rate of the rapid compartment was depressed at 1 hr after trauma ($k=0.081 \text{ min}^{-1}$) compared to control animals ($k=0.29 \text{ min}^{-1}$) and was elevated at 24 hr ($k=0.52 \text{ min}^{-1}$). These changes were associated with a 35% decrease in hepatic platelet localization at 1 hr and a 55% increase above normal at 24 hr. Splenic platelet localization was decreased 31% by 3 hr following trauma. Pulmonary platelet localization was increased at all times following trauma with a maximal 320% increase 3 hr post-trauma. It is concluded that the post-trauma state is associated with a defect in the RES clearance of altered platelets which may in turn augment embolization of platelets in the microcirculation.