Thromboembolism has been frequently reported in cancer patients, mainly in cases with solid tumors. Besides in several animal models, fibrin deposition around the tumor and platelet aggregates appear to be involved in invasion and metastasis. This study was aimed at evaluating the extent of in vivo platelet activation and fibrin formation in several kinds of human cancer. We excluded from this study patients whose blood was sampled with difficulty as those having clinical evidence of thrombosis or embolism, those with thrombocytopenia, increased fibrinogen degradation products or biological pattern of disseminated intravascular coagulation. Fibrinopeptide A (fPα) and β-thromboglobulin (β-TG) which were released by RIA. Free platelet count ratio (PCR) was determined on whole blood samples as an index of circulating aggregates. Usual coagulation tests, antithrombin III activity, protein C plasma level, F VIII related antigen (F VIII RAG), F VIII Ristocetin cofactor (F VIII RCF) and F VIII procoagulant activity (F VIII C) were also determined.

It was found that in more than fifty percent of patients, fPα was significantly increased above the upper reference limit. Cases with increased β-TG were less frequent. Separate increases in β-TG or fPα levels were often observed. PCR remained within the reference values in all patients. F VIII RAG and C were usually above 150 % of the reference mean.

We conclude that platelet release and fibrinolysis frequently occurs in cancer patients showing no signs of thrombotic process. Increased level of fPα with normal plasma β-TG level suggests that thrombin generation occurs only in the extravascular compartment, probably next to the tumoral tissues. Increased levels of plasma β-TG with normal fPα levels may result from platelet activation by other stimuli than thrombin. It must be emphasized that normal PCR does not exclude the presence of fibrinous circulating aggregates which cannot be dispersed by EDTA. High F VIII activities may be due to the release of the von Willibrand factor from tumoral vessels.

It has been reported in animal experimental systems that platelet aggregating material extracted from human lung adenocarcinoma cells line which metastasized in nude mice stimulates platelets. This study demonstrated that flow cytometry can be used to identify the presence of glycoproteins in platelets and to evaluate their expression. The study also suggested that the methods employed to obtain the tumour cells can influence the results, probably because of the different cell populations which are present in the dissociated tumour tissues. Information obtained with freshly dissociated cells is interesting, because this method has been used seldom so far and because it provides a more physiological approach to the study of the interactions of tumours and platelets.

CHARACTERIZATION OF PLATELET AGGREGATING MATERIAL EXTRACTED FROM HUMAN LUNG ADENOCARCINOMA CELL LINE WHICH METASTASIZED IN NUDEx MICE S.C., IMPLANTATION. H. Inufusa, N. Sagara, K. Nakano and M. Yamazaki. Department of 1st Surgery, Kitasato University School of Medicine, Minamikawasaki-ku, GUN, JAPAN.

It has been reported in animal experimental systems that platelet aggregating material from human lung adenocarcinoma cells line which metastasized in nude mice stimulates platelets. This study demonstrated that flow cytometry can be used to identify the presence of glycoproteins in platelets and to evaluate their expression. The study also suggested that the methods employed to obtain the tumour cells can influence the results, probably because of the different cell populations which are present in the dissociated tumour tissues. Information obtained with freshly dissociated cells is interesting, because this method has been used seldom so far and because it provides a more physiological approach to the study of the interactions of tumours and platelets.

PLATELET ACTIVATION BY HUMAN CANCER CELLS GROWN “IN VITRO" OR DISSOCIATED FROM TUMOUR TISSUES.
G. Grignani, L. Piacentini, M. Zucchiella, L. Dezza, S.C. Prizzo. Department of Internal Medicine, Universi­ty of Pavia, 27100 Pavia, Italy.

The mechanisms of platelet activation by human tumour cells grown in “in vitro" or freshly dissociated from tumour tissues have been investigated. MG63 human 2-lymphoblastic cells cultured “in vitro" induced platelet aggregation through the production of ADP, as evidenced by inhibition of the effect by aspirin. The maximum of ADP production by tumour cells was reached after 1 hour and was 225 p moles/10^6 cells.

On the contrary, platelet aggregation induced by 5637 human bladder carcinoma cells was not inhibited by aspirin, but was abolished by hirudin, indicating the important role of thrombin in this effect. Tumour cells dissociated from 3 breast carcinomas showed a very high platelet aggregating activity, which was not inhibited by hirudin or aspirin, but was abolished by iodoacetic acid, suggesting a role for a cystein-precate in platelet activation.

These results confirm that platelets can be activated by tumour cells through different mechanisms; they also suggest that the methods employed to obtain the tumour cells can influence the results, probably because of the different cell populations which are present in the dissociated tumour tissues.

Information obtained with freshly dissociated cells is interesting, because this method has been used seldom so far and because it provides a more physiological approach to the study of the interactions of tumours and platelets.