Coagulation Profile in patients with Breast Cancer

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Fifty subjects with breast cancer patients and 25 healthy control were included in this study. Routine hematological investigations i.e. Hb, TLC, platelets count were done by hematology analyzer and specific investigations like prothrombin time (PT), activated partial thromboplastin time (APTT) and fibrinogen level were performed by using commercially available kits. Results obtained were analyzed by using Student's 't' test and level of significance was done. Platelets count and fibrinogen levels were increased in breast cancer patients but PT and APTT were comparable with control group.

Key words: Breast cancer, PT, APTT

The coagulation disorders of non-haematological malignancies can cause either excessive clotting and excessive bleeding or the combined abnormalities of excessive clotting leading to consumption of coagulation factors and secondarily to excessive bleeding. The non-haematological malignancies include carcinomas e.g. breast, prostate, ovary, lung, stomach etc., and many other solid tumors1-2. Clinically, the relationship between malignancy and thrombosis has been obvious for over 100 years. Thrombo-embolism is present in up to half of cancer patients at autopsy and there is higher incidence of occult malignancy in patients with deep vein thrombosis (DVT). Thrombosis in cancer often is migratory and may involve superficial veins and relatively unusual sites. In the laboratory, evidence of intravascular coagulation is readily obtained. Some have thrombocytopenia, falling fibrinogen levels and raised fibrinogen degradation product (FDP), but these represent only the decompensated form of DIC, and a larger proportion has evidence of compensated or overcompensated DIC. Thrombocytopenia is more common, and functional defects such as reduced adhesion, aggregation and clot retraction also may be observed4,5.

Fibrinogenemia is common but acquired dysfibrinogenemia is rare unless the liver is involved. As intravascular activation of coagulation and fibrinolysis occurs together, cancer patients may have shortened euglobulin clot, lysis times, decreased plasminogen levels, and an increase in plasmin-antiplasmin complexes. Most patients with cancer complicated by acute DIC have elevated FDP levels. The likelihood of increased FDP is greater in patients with remote metastases, compared to localized disease and may have prognostic value6,7,8.

The purpose of the present study is to assess the coagulation abnormalities in patients of breast cancer and to help the clinician in early detection of DIC and management of patients at different stages of breast cancer.

Methodology:
Seventy five subjects were divided into two groups. Group I included 50 breast cancer patients and Group II included 25 normal, healthy controls. Five ml of blood was collected and was distributed as follows: 1.8 ml of blood was mixed with 0.2 ml of sodium citrate for PT, APTT and fibrinogen level. 3 ml of blood was mixed with EDTA for routine hematological tests9. The results and data obtained were subjected to statistical analysis by using Student's 't' test and level of significance was done9,10.

Results
The results and level of significance of these groups are given in tables 1 and 2.

| Table 1: Routine Hematological Investigations in Group I and II |
|-------------------|-----------------|------------------|------------------|
| Tests             | Group I (Breast Cancer Subjects) | Group II (Control) | Significance |
| Hb                | 11.8 ± 1.7      | 12.8 ± 0.99      | HS              |
| TLC               | 7.2 ± 2.1       | 7.5 ± 1.5        | NS              |
| Platelets         | 256.0 ± 91.6    | 227.1 ± 49.9     | HS              |

| Table 2: Specific Haematological Investigations in Group I & II |
|-------------------|-----------------|------------------|------------------|
| Tests             | Group I (Breast Cancer Subjects) | Group II (Control) | Significance |
| PT                | 12.2 ± 2.17     | 12.8 ± 1.27      | NS              |
| APTT              | 25.9 ± 2.3      | 25.2 ± 2.5       | NS              |
| Fibrinogen        | 372.4 ± 116.03  | 265.6 ± 44.9     | HS              |

Discussion
Haematological Investigations: In the present study, the Hb was found to be slightly lower in subjects with breast cancer as compared to control group (II) and difference was significant statistically. The findings are in agreement with that of Rickles et al (1992)9 who also observed low Hb levels in subjects suffering from breast cancer. TLC in the present study was found to be lower in subjects with breast cancer when compared with controls though it was non-significant statistically. In the present study, the platelet count was found to be significantly higher (p < 0.05) in subject with breast cancer when compared with control. These results are in consistent with the findings of Francis et al (1985)11 who also observed this change in breast cancer patients.

In the present study, PT and APTT were found to be comparable with control groups. Fibrinogen level were found to be significantly increased (p < 0.01) in patients with different stages of breast cancer when compared with controls. This study is in agreement with the findings of Gordon et al (1999)12 who also observed significantly increased fibrinogen level in breast cancer patients.

Reference


