



CLINICAL AND PROGNOSTIC SIGNIFICANCE OF COAGULATION PROFILE BEFORE AND AFTER CHEMOTHERAPY AND RADIOTHERAPY IN CARCINOMA CERVIX

Pathology

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ABSTRACT

The most frequent gynecological carcinoma causing danger to women health is cervical cancer. Oncogenic mechanisms are now known to intertwine with hemostatic processes, shifting the hemostatic balance toward either increased thrombogenicity or a bleeding tendency. The present study was done to compare the changes in coagulation profile before and after chemotherapy and radiotherapy of carcinoma cervix patients and also to evaluate their clinical and prognostic significance. A total of 30 patients were taken for the study and coagulation parameters PT, APTT, and INR were assessed before and after the treatment. Significant correlations were found between PT, APTT and INR, both before and after chemotherapy, highlighting their interdependence in cervical carcinoma patients and underscoring the clinical importance of monitoring coagulation profiles in these patients

KEYWORDS

Coagulation profile, chemotherapy, radiotherapy, carcinoma cervix.

INTRODUCTION :

After colorectal and breast cancer, cervical carcinoma causes the most deaths in women, with over 80% of cases occurring in poor nations [1,3]. Major cancer threat is that associated with Human papilloma-virus (HPV) infection of which high risk HPV 16, 18 are carcinogenic subtypes [3,4]. Cancer disturbs the blood clotting system, thus, in carcinoma cervix patients, the coagulation pathway's significance lies in its impact on thrombosis risk, bleeding complications, and treatment adjustments. Coagulation tests PT and APTT measure the extrinsic and intrinsic routes of coagulation pathway. Concurrent chemotherapy is the accepted standard of therapy for more advanced patients [5]. Chemotherapy can significantly impact the coagulation profile of these cancer patients, primarily due to its ability to damage blood cells, including platelets, which are essential for clotting. Additionally, certain chemotherapy drugs can directly interfere with the clotting process. Patient's age, size of the tumor, depth of invasion and LVI (lympho-vascular invasion) are all potential prognostic parameters in cervical cancer patients, which affect the overall survival.

Aims And Objectives:

1. To check the coagulation profile of carcinoma cervix patients prior to starting the treatment.
2. To check the coagulation profile of carcinoma cervix patients following the treatment is done.
3. To compare the changes in coagulation profile ahead of and consequent to chemotherapy and radiotherapy of carcinoma cervix patients

MATERIALS AND METHODS:

The current research was prospective study done for 1 year duration on patients of carcinoma cervix, at Government Medical College, Amritsar after due approval from institutional Ethics committee and informed consent from the patients enrolled. Detailed history in all cases, including all presenting complaints and associated symptoms were noted along with thorough general and systemic examinations. Peripheral blood samples were taken for coagulation profile and then patient underwent chemotherapy (CT) and radiotherapy (RT). After completion of RT and CT again sample was taken for coagulation

profile and both the results compared. Coagulation profile tests (PT, APTT and INR) were performed using automatic coagulation analyzer - Erba Mannheim ECL 412 coagulometer. Statistical analysis was performed on the results obtained and correlations were drawn wherever possible

RESULTS :

A total of 30 carcinoma cervix patients enrolled in the present study, were stratified into age groups, with majority of patients belonging to 50-60 years (40%) with mean age of 52.73years. Among clinical features, most cases presented with complaint of vaginal discharge (40%) followed by post-coital bleeding (33.4%), abdominal pain (16.6%), abdominal pain with bleeding per vagina (10%). Majority cases were diagnosed as Squamous cell carcinoma (93.3%) and only 6.7% had adenocarcinoma as diagnosis. Mean Hb in our study was 100 g/l.

Table1: Size Of Tumor

SIZE GROUP	NUMBER	%AGE
<2 cm	12	40
2-4 cm	15	50
>4 cm	3	10
Total	30	100

Table 2: Depth Of Invasion

SIZE GROUP	NUMBER	%AGE
<5mm	2	6.7
>5mm	28	93.3
Total	30	100

Table 3. Lympho-vascular Invasion

LVI	NUMBER	%AGE
Absent	2	6.7
Present	28	93.3
Total	30	100

Table 4: Coagulation Test:

Coagulation parameters	Mean value	Correlation	P value
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Pre PT	15.28	.813	.000
Post PT	13.32		
Pre INR	1.133	.722	.000
Post INR	.987		
Pre APTT	40.01	.489	.006
Post APTT	32.65		

DISCUSSION:

The present prospective clinicopathological study with total of 30 diagnosed cases of cervix-cancer was done at GMC, Amritsar. Majority cases were between 51-60 years age group. This was in close agreement to the studies by Ghosh M [6] and Vashisht A et al. [7] which found the mean age of patients as 53 years. Squamous cell carcinoma was the most prevalent type of cervical cancer among the patients in our study, accounting for 93.3% of cases. This observation was ascertained to be similar with the study conducted by Jyothi V et al [8] Most cases in current study presented with vaginal discharge followed by post-coital bleeding and abdominal pain, which turned out to be similar with study by IKRAM M et al [9].

Mean Hb was observed to be lower (100g/l) and was inconsistent with the study conducted by Barkati M et al. [10] and by Gasinska A et al [11] showing that Hb concentration was higher in their study groups. This discordance with our study maybe due to small sample size.

Majority patients had tumor size lying within 2-4 cm (Table 1). Depth of invasion <5mm and absent lymphovascular invasion were observed in only 6.7% of all patients (Tables 2 and 3). Presence of larger tumour size, increased DOI and LVI were linked to poorer outcome. Similarity was seen with studies like Kawagoe T et-al. [12] who stated that subjects with tumour size greater than 3 cm were linked to poor survival likelihood (63%, $P < 0.0001$). Moreover, study conducted by Kristensen et al [13] in early cancer stages represented that according to dimension and depth of invasion, the patients were segregated in two groups. One group consisted of 85 cases who had cancer magnitude 20mm and presence of LVI 43% Disease free survival.

Comparison of coagulation profile in the 30 cases enrolled in present study showed that before chemotherapy and radiotherapy (PrePT), the mean PT was 15.28 seconds and reduced to 13.32 seconds after the treatment (Post PT) (Table 4). Correlation was discovered to be highly significant with p value <0.001. Similarly, significance was noted among mean APTT before treatment (Pre APTT) was 40.01 and after treatment (Post APTT) was 32.65 (p -value 0.006) as well as among INR ($p < 0.001$).

Numerous studies in cancer patients done showed similar findings. Study done by Gabazza E C et al [14] consisted of 25 patients of lung cancer who received chemotherapy and results were compared before and after chemotherapy and the study came out as highly significant ($p < 0.002$) with mean pre PT of 11.0s and post PT 10.7s and pre APTT of 40.1s and post APTT of 34.7s. Canobbio et al [15] depicted, a study in 49 patients who had received chemotherapy for breast cancer was begun to find antineoplastic drugs action on coagulation factors and platelet function. Among the coagulation factors, a significant decrease of PT and APTT was observed with significant p value (< 0.05) with mean pre PT of 12.4s and post PT 11.7s and pre APTT of 30.2s and post APTT of 26.3s. The findings of above studies are correlating with our present study suggesting that an imbalance of coagulation fibrinolysis system might be a contributing factor in the pathogenesis of thrombotic complication due to chemotherapy.

CONCLUSIONS:

The study was designed to evaluate the clinical & prognostic significance of coagulation profile in cervix cancer prior to and after chemotherapy and radiotherapy. It was noted higher tumor size, increased depth of invasion and presence of LVI had poor impact on the prognosis of ca-cervix. Significant correlations were found between PT, APTT and INR, both before and after chemotherapy and radiotherapy, highlighting their interdependence in cervical carcinoma patients and underscores the clinical importance of monitoring coagulation profiles in CA cervix patients. Post chemotherapy improvements in coagulation parameters suggest not only their role in monitoring treatment efficacy but also potential prognostic implications in terms of disease management and patient outcomes. In conclusion, monitoring coagulation profiles remains crucial in managing CA cervix, with chemotherapy and radiotherapy showing

promise in modifying these parameter

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