

**Original Research Paper** 

Pathology

## STUDY OF HAEMATOLOGICAL AND COAGULATION PROFILE IN PATIENTS WITH GASTROINTESTINAL MALIGNANCIES

Dr Bhubaneswar	Associate Professor, Department of Pathology, Gauhati Medical College and
Saikia	hospital, Guwahati, Assam
Dr Rosy Khandelia*	Demonstrator, Department of Pathology, Gauhati Medical College and hospital, Guwahati, Assam.*Corresponding Author

ABSTRACT Background: Gastrointestinal (GI) Malignancy is one of the commonest malignancies encountered in developing countries. The goal of this study was to analyze the haematological and coagulation profile- Complete Blood Count (CBC), Prothrombin time (PT), activated partial thromboplastin time (aPTT) among patients of gastrointestinal malignancies.

**Materials and Methods:** Fresh blood samples were collected from the diagnosed patients with appropriate anticoagulant in proper proportion. Complete blood count was done by automated analyzer. Peripheral blood smear was seen in cases with abnormal results on CBC. Peripheral smears were stained with Leishman's stain using standard procedures and then examined under light microscope.

**Results:** A total of 30 patients with gastrointestinal malignancy were included in this study. There were 19 males and 11 females. Among all cases of gastrointestinal malignancy, stomach cancers constitute the maximum (50%) followed by rectal cancers accounting for 23.3%. GI malignancy had negative impact on haemoglobin profile, affecting 56.6% of cases. In peripheral smear study, microcytic hypochromic anaemia was most common comprising 63.3% of cases. Regarding leukocyte count, 16(53.3%) cases had leukocytosis,07 have normal leukocyte count,7 had leukopenia. Out of 30 cases, 56.6% had normal thrombocyte count, 30% had thrombocytopenia and 13.3% had thrombocytosis. Out of 30 cases, 60% cases had the normal prothrombin time and 40% cases had values higher than the reference value. Regarding activated partial thromboplastin time (aPTT), 63.3% cases had normal reports and 36.6% cases had values higher than the reference value.

**Conclusion:** Reduced haemoglobin, increase in neutrophil count, change in coagulation profile are associated with poor prognosis in patients with GI malignancy. Hence close monitoring of haematological and coagulation profile in patients with gastrointestinal malignancy will help in reducing morbidity and mortality.

### KEYWORDS : gastrointestinal malignancy, stomach cancer, hematological profile, coagulation profile.

#### INTRODUCTION

Gastrointestinal (GI) Malignancy is one of the commonest malignancies encountered in developing countries. Anemia is common in patients with cancer. The incidence and severity of anemia depend on the type and extent of the malignancy. Anemia may be the result of the malignancy itself, cancer treatment, blood losses, hemolysis or inflammatory cytokines associated with chronic disease.<sup>1</sup> The close relationship between blood coagulation and neoplastic disease has been recognized for more than 100 years since Armand Troussseau first reported the high incidence of venous thrombosis in patients with gastric carcinoma.<sup>2</sup> Since then, many reports have used autopsy studies and clinical evidence to document thromboembolic and hemorrhagic complications in a high proportion of patients with cancer.<sup>3</sup> Similarly, platelet counts vary considerably in large studies. Thrombocytopenia has been reported in up to 27% of patients in some studies,<sup>4</sup> whereas others have emphasized instead the occurrence of thrombocytosis in as many as 60% of untreated patients with cancer.<sup>5</sup> Aims and objectives: The goal of this study was to analyse the haematological and coagulation profile- Complete Blood Count (CBC), Prothrombin time (PT), activated partial thromboplastin time (aPTT) among patients with gastrointestinal malignancies.

#### **MATERIALS AND METHODS**

Fresh blood samples were collected from the diagnosed patients with appropriate anticoagulant in proper proportion. Complete blood count was done by automated analyzer. Peripheral blood smear was seen in cases with abnormal results on CBC. Peripheral smear were stained with Leishman's stain using standard procedures and then examined under light microscope.

#### **RESULTS AND OBSERVATIONS**

A total of 30 patients with gastrointestinal malignancy were included in this study. There were 19 males and 11 females, the male: female ratio being 1.7:1. Maximum number of cases belong to age group 51-70 years as shown in table 1.

#### Table-1:AGE AND SEX DISTRIBUTION OF SUBJECTS

AGE	MALE	FEMALE
11-20 Years	00	00
21-30 Years	00	00
31-40 Years	02	01
41-50Years	04	03
51-60Years	07	03
61-70 Years	06	04
71-80 Years	00	00
81-90 Years	00	00
TOTAL	19	11

Among all cases of gastrointestinal malignancy, stomach cancers constitute the maximum (50%) followed by rectal cancers accounting for 23.3% as shown in table 2.

#### Table 2: PART OF GIT AFFECTED:

ORGAN AFFECTED	NO OF CASES
Oesophagus	05
Stomach	15
Colon	02
Rectum	07
Anal canal	01

Gastrointestinal malignancy had negative impact on haemoglobin profile, affecting 56.6% of cases. Among them 20% of cases were severely anemic requiring blood transfusions as shown in table 3.

#### Table-3: GI MALIGNANCY WITH HAEMOGLOBIN

Haemoglobin	MALE	FEMALE
>10 mg/ml	07	06
10-10.9mg/ml	03	02
7-9.9 mg/ml	05	01
<7 mg/ml	04	02
TOTAL	19	11

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In peripheral smear study, microcytic hypochromic anaemia was most common comprising 63.3% and 26.6% showed normal study as shown in table 4.

# Table-4: COMPARITIVE STUDIES OF GI MALIGNANCY WITH PERIPHERAL SMEAR WITH RESPECT TO RBC:

Total	Normocytic	Microcytic	Macrocyti	Dimorphi
cases	normochromic	hypochromic	c	c
30	08	19	02	01

Out of 30 cases, 16(53.3%) cases had leukocytosis,07 cases have normal leukocyte count,7 had leukopenia as shown in table 5.

#### Table-5: GI MALIGNANCY WITH LEUKOCYTE COUNT

Leukocyte count	NO OF CASES
Normal	07
Leukocytosis	16
Leukopenia	07
Total	30

On the assessment of the differential count of white blood cells, about 45% of the patients had neutrophilic leukocytosis, while lymphopenia was seen in 38% of cases.

Out of 30 cases, 56.6% had normal thrombocyte count, 9 cases (30%) had thrombocytopenia and 4 cases (13.3%) had thrombocytosis as shown in table 6.

#### Table-6: GI MALIGNANCY WITH PLATELET COUNT

Platelet count	NO OF CASES
Normal>1.5 lakh	17
Thromocytopenia<1.5 lakh	09
Thrombocytosis	04
Total	30

Out of 30 cases, 18 (60%) cases had the normal prothrombin time (reference value 11-16 seconds) and 12(40%) cases had values higher than the reference value (above 16seconds). Regarding activated partial thromboplastin time (aPTT), 19(63.3%) cases had normal reports (reference value 21-29 seconds) and about 11(36.6%) cases had values higher than the reference value (above 29 seconds).

#### DISCUSSION

Regarding the haemoglobin levels, 56.6% of the patients were found to be anemic in our study. This was in accordance to the study done by Vasuki.SM et al where 68% of patients were found to be anemic. Several studies revealed that the haemoglobin level is the powerful prognostic factor for locoregional tumour control.<sup>67</sup> In view of the white blood cell count, leukocytosis was seen in 53.3% of the patients. This proves the close relationship between inflammation and cancer.<sup>®</sup> On the assessment of the differential count of white blood cells, 45% of the patients reported neutrophilic leukocytosis, while lymphopenia was seen in 38% of cases. Joeng JH et al in their study observed an increased PMNs level in gastric cancer patients." Ray-Coquard I et al also observed lymphopenia in his published studies on cancer patients and showed that lymphopenia is an independent prognostic factor for overall survival in several cancers.<sup>10</sup> There was an increase in platelet count in 13.3% of patients. M. Ikeda et al observed an increase in platelet count in 11.4% of the cases.<sup>11</sup> 40% of the patients had an increased prothrombin time. Edwards RL in their study supports the presence of subclinical activation of blood coagulation in most patients with cancer.12

#### CONCLUSION

Reduced haemoglobin, increase in neutrophil count with decreased lymphocyte count, change in coagulation profile are associated with poor prognosis in patients with gastrointestinal malignancy. Hence close monitoring of haematological and coagulation profile will help in reducing morbidity and mortality in patients with gastrointestinal malignancy.

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