



Estimation of Hemoglobin and Red Blood Cell Count in Patients with Malignancy

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Abstract

Background: Malignant neoplasms are one of the leading cause of death globally. An abnormal hematological picture may be its initial presentation.

Objective: To estimate the values of hemoglobin and red cell count in patients with malignancy.

Methods: Forty eight cases of histopathologically proven malignant cases were taken for the study. Hemoglobin and red cell count were analyzed by an automated 3-part hematology analyzer.

Results: Out of these 48 cases, 32 cases (66.6%) had lower hemoglobin levels and 12 cases (25%) had lower red cell count.

Keywords: Patients with Malignancy, Hemoglobin, Red blood cell count.

Introduction

Malignant tumors are one of the most common cause of death nowadays. The symptoms of cancers will vary depending upon the site, type and its biologic behaviour^{1,3}. An abnormal haematological picture may be the first manifestation of many malignancies which can be anemia, polycythemia, leucocytosis, etc. The reason behind these may be due to blockage of normal hematopoiesis or by invasion of bone marrow⁴. About 60-75% of the cancer patients develop anemia in several studies and it is the most common finding². The aim of the present study was to analyze the hematological parameters like Hemoglobin and RBC count among patients with various malignancies. 48 patients diagnosed

with various malignancies were taken up for the present study. The study revealed variations in hemoglobin and RBC count.

Materials and Methods

The present study was done at department of pathology of Rajah Muthiah Medical College and Hospital, Chidambaram, Tamil Nadu. Patients who were diagnosed histopathologically with malignancy during the period of August 2019-February 2020 were included and patients with hematological malignancies and patients on chemotherapy and radiotherapy were excluded. The blood samples of forty eight histopathologically confirmed malignant patients were collected and analyzed by an automated 3-

part hematology analyzer and the values of Hemoglobin and RBC count were estimated.

Observation and Results

Out of 48 cases taken up for study, 36 were females and 12 were males. Table 1 and Graph 1

shows the malignancy distribution sex-wise among the study population. Distribution of hemoglobin level is shown in table 2 and graph 2. Table 3 and Graph 3 shows the RBC count among study population.

Table 1: Distribution of malignancy and sex among study population

Malignancy	Female	Male	Total
Breast	19	1	20
Cervix	8	0	8
Endometrium	2	0	2
Ovary	1	0	1
GIT	2	5	7
Oral cavity	4	2	6
Bladder	0	2	2
Skin	0	2	2
Total	36	12	48

Graph -1 Distribution of malignancy and sex among study population

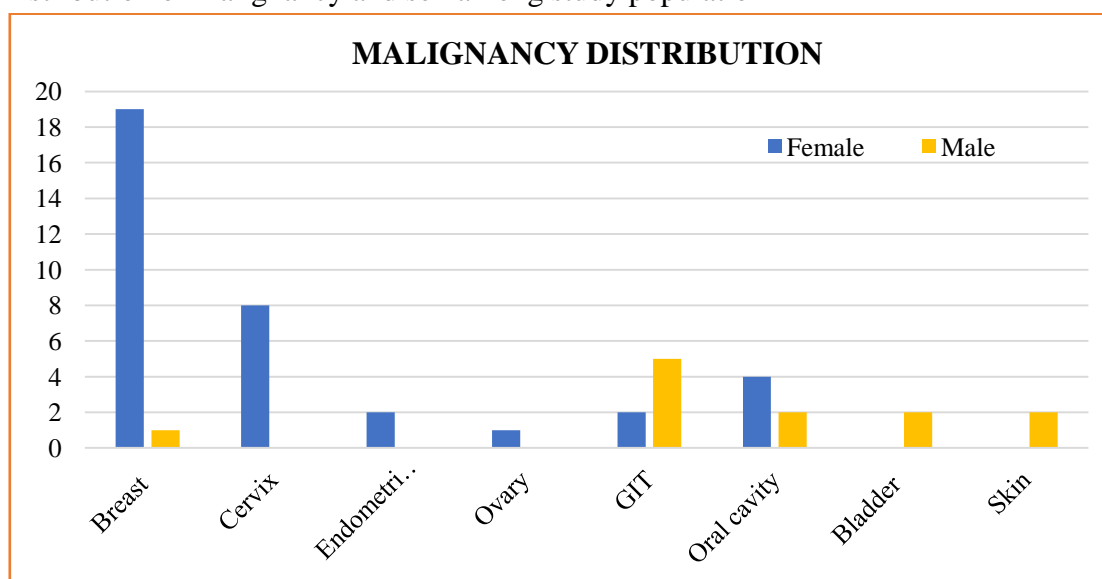


Table 2: Distribution of Hemoglobin level among study population

Hemoglobin level(g/dl)	No.of.cases	%. of. Cases
Normal limit	16	34%
10 to the lower normal limit	17	35%
8-9.9	9	19%
6.5-7.9	2	4%
<6.5	4	8%

Graph 2: Distribution of Hemoglobin level among study population

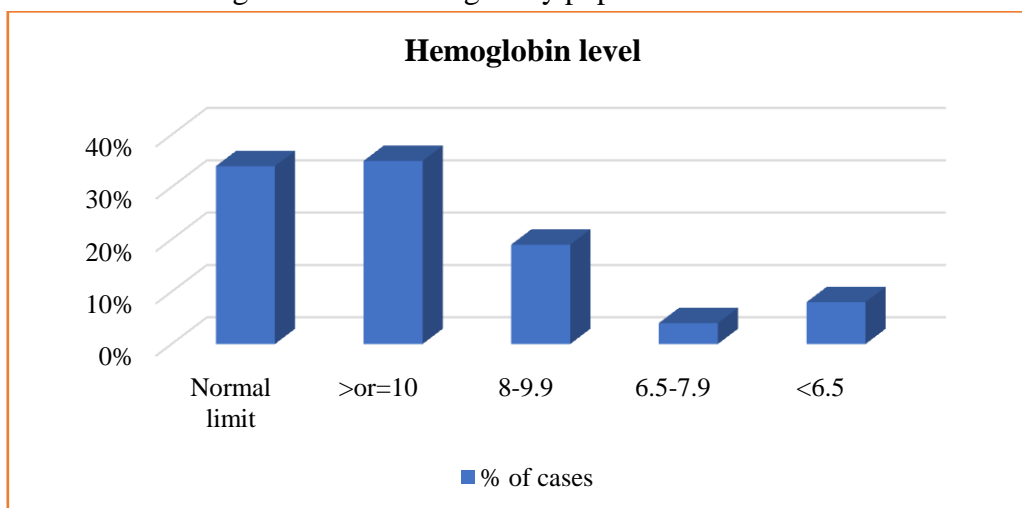
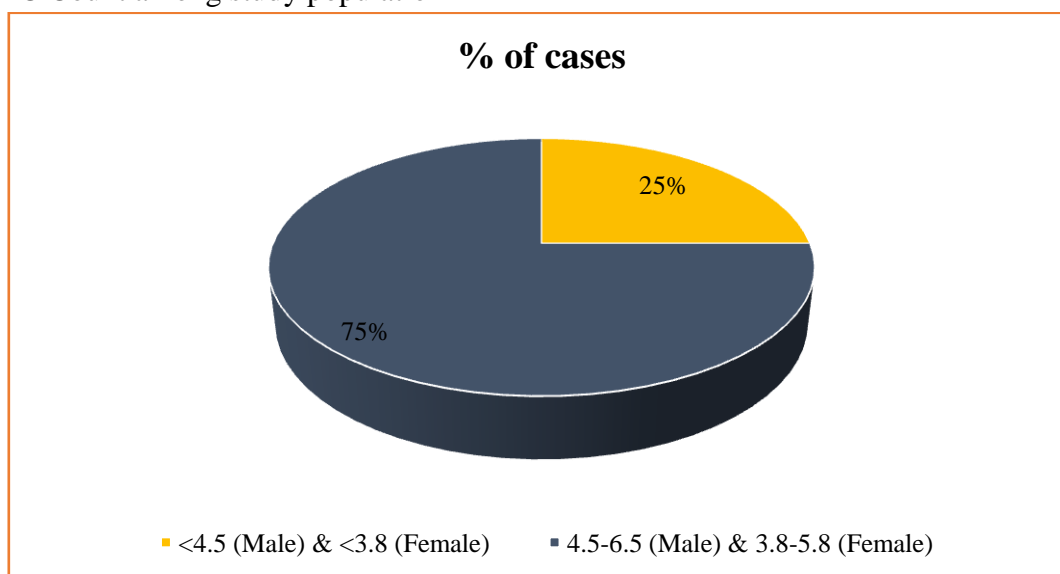


Table 3: RBC count among study population

RBC COUNT	No.of.cases	% of cases
<4.5(Male) & <3.8 (Female)	12	25%
4.5-6.5(Male) & 3.8-5.8 (Female)	36	75%

Graph 3: RBC Count among study population



Discussion

Malignant patients may present with various symptoms like mass, pain, weight loss, loss of appetite etc., which depends on the site and type of malignancy³. If it starts metastasize, the symptoms will depend on the organ where it is metastasized. Sometimes, their first presentation will be abnormality in hematological profile³. Anemia is a frequent complication both at diagnosis and treatment. According to WHO, the most common cancers are lung, breast, colorectal,

prostate, stomach and skin cancers⁵.In our present study, 48 cases of histopathologically confirmed different malignant tumours were included and their hemoglobin and RBC count were estimated. Among 48 cases, 36 were females and 12 were males. Age group varied from 30 to 85 years. Among females, breast cancer was most common (19 cases), then followed by cervix (8 cases), lip and oral cavity (4cases), endometrium (2 cases) and each case of colorectal, stomach and ovary. In males, stomach cancer (3 cases), followed by

colorectal (2 cases), oralcavity (2 cases), bladder (2cases), skin (2 cases) and breast (1 case).

In the present study, reduced level of hemoglobin was observed in 32 cases (66.6%). According to National Cancer Institute Classification, out of these 32 cases, 17(35%) had mild degree of anemia, 9(19%) had moderate anemia, 2 (4%) had severe anemia and 4(8%) had life-threatening anemia. Among 66.6% of anemic patients, 79% were females and 21% were males. In an observational hospital study done by Munish kumar sharma et al at Punjab to compare hemoglobin level among cancer patients it was observed that 88% of them had mild to moderate anemia and 12% of them had severe to life-threatening anemia.⁶ In a study conducted by Giridhar et al about the Iron deficiency anemia coexists with cancer related anemia it was found that the prevalence of anemia as 64%.⁷ Gunduz et al performed a study on standard blood parameters in anemic patients with cancer and other diseases and found that the malignant patients had lower RBC count than the patients without malignancy.⁸ The study conducted by Riedl et al on red cell distribution width and other red cell parameters in patients with cancer had revealed that total RBC count were lower in patients with increased red cell distribution width and higher level of hemoglobin, and RBC count were associated with decreased mortality in cancer patients.⁹

Conclusion

Cancer is one of the leading cause of death worldwide. From the above study it is concluded that certain changes in hemoglobin and red cell count will occur in cancer patients. Anemia is the most common finding and it should be taken seriously in cancer patients. By early diagnosis and correction of anemia we can improve the quality of life of patients and it also improves further treatment response (radiotherapy and chemotherapy) of cancer patients.

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