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Hematological parametres in patients diagnosed with solid tumors of non hematological etiology

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Abstract

Introduction: Malignant neoplasm is an uncontrolled proliferation of cells and is the principle cause of mortality and symptoms depends on the type of malignancy, site and its biological behavior. Abnormal hematologic picture which present as paraneoplastic syndrome may be the first presentation.

Method & material: This is a cross observational study conducted in department of pathology. All the histologically proven malignant cases between January to July 2018 were included in the study and complete blood counts like TLC, DLC, RBC counts and platelet counts retrieved from patient record.

Results: Anemia was most common hematological abnormality seen which constituted 37 out of 62 cases followed by platelets and total leukocyte count. Neutrophilic leukocytosis was the most common hematological features seen in abnormality in WBC count

Conclusion: Early detection and management can prevent associated morbidity and improve patient care.

Keywords: hematological parametres, solid tumor, non hematological etiology.

Introduction

Malignant neoplasm is an uncontrolled cell division and is one of the principle causes of mortality in developed countries and second leading cause of mortality in the developing world. Non hematological malignancy may present with hematological features initially such as anemia, polycythemia, leukocytosis, thrombocytosis, monocytosis, eosinophilia, thrombocytopenia etc.

Anemia is the most common hematologic abnormalities in patients with cancer. It is characterized by reduction in Hb, RBC or HCT count below normal level. Either overt or occult bleeding may be clue that leads to initial diagnosis of cancer. Iron deficiency anemia may develop due to persistence of blood loss. Several factors have been found to be associated with anemia and its magnitude. These factors include tumour type, disease stage, age of patient and duration, intensity and type of treatment (chemotherapy/radiotherapy), blood loss and nutritional deficiency.

Elevated white blood cell count is seen in various types of non hematological malignancy particularly in lung carcinoma. Degree of leukocytosis is generally modest (less than 15000 cells/cumm) and metastasis of liver and lung may be followed by marked increase in white blood cell count. Eosinophilia and monocytosis may be an early markers in various malignancy. Eosinophilia is generally elevated in allergic reactions or parasitic manifestation.

Mean platelet volume is routinely measured in complete blood count analysis and is an indicator of platelet activation. Its plays an important role in angiogenesis in addition to coagulation cascade.

Aim and objective

1. To study various hematologic parameters such as Hb, TLC, DLC and platelet count
2. To study any specific parametres in specific carcinomas such as such as GIT tumors.

Methodology

The present study was conducted in department of Pathology SSIMS and RC. All the histological proven malignant cases between January and July 2018 were included in the study.

All the cases were subjected to complete hematological profile which include hemoglobin (Hb), total leucocyte count (TLC), Differential leucocyte count (DLC), Packed cell volume (PCV), RBC count. Detailed peripheral blood examination was carried out after staining the blood film with Romanowsky stain. Automated analyser was used for complete blood count. Platelet count was confirmed on peripheral blood examination. Hematological parameters were analysed as per standard of Dacie and Lewis.

Results

This is a prospective study in which 62 cases of histologically proven malignant cases were included. Out of these 62 cases, 35 were female and 27 were male patients. Male to female ratio was 1:1.29. Age of patients ranged from 18 to 70 years. Maximum incidence was seen in 4th and 5th decade in both males and females.

GIT tumor consisted majority of cases which were seen in 14 cases out of 62 cases and least malignant cases were from prostate and kidney which consisted 1 cases each.

Breast carcinoma were most common malignancy observed in female which were seen in 12 cases followed by cervical carcinoma where were observed in 10 cases. In males most malignancy observed was oral cancer which constituted 10 cases out of 62 cases.

Anemia was seen in 37 patients out of 62 patients. 23(65.71 %) females out of 35 were anemic whereas 14 (51.85) male

patients out of 27 males were anemic. The lowest hemoglobin (4 gm %) was seen in squamous cell carcinoma of tongue.

Abnormal neutrophil counts were observed in 13 cases and majority of cases were neutrophilic leukocytosis which were seen in 8 cases. Out of total 8 neutrophilic leukocytosis cases, 6 were squamous cell carcinoma.

Out of 13 cases of platelet abnormality, thrombocytosis was seen in 8 patients and thrombocytopenia was seen in 5 patients

Table 1: Sex distribution of patients studied

Gender	No of patients	Percent	Ratio
Male	27	43.5	1:1.29
Female	35	56.5	
Total	62	100.0	

Table 2: Age range distribution of patients studied

Age group	No of patients		Total
	Male	Female	
10-20	0	2	2
21-30	1	1	2
31-40	4	1	5
41-50	5	14	19
51-60	11	8	19
61-70	6	9	15

Table 3: Hematological profile in various non-hematological malignancies

Tumour	Hb		TLC		N		L		M		E		B		TRC		PLC	
	N	A	N	A	N	A	N	A	N	A	N	A	N	A	N	A	N	A
GIT (14)	7	7	13	1	13	1	14	0	14	0	13	1	14	0	10	4	13	1
Breast (12)	4	8	10	2	9	3	12	0	12	0	12	0	12	0	8	4	9	3
Oral (11)	3	8	10	1	7	4	10	1	11	0	10	1	11	0	2	9	8	3
Cervix (10)	3	7	7	3	7	3	9	1	10	0	10	0	10	0	7	3	7	3
Ovary (3)	2	1	3	0	3	0	3	0	3	0	3	0	3	0	2	1	3	0
Larynx (2)	1	1	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0
Uterus(2)	1	1	2	0	1	1	2	0	2	0	2	0	2	0	0	2	2	0
Penis (2)	1	1	1	1	1	1	2	0	2	0	2	0	2	0	1	1	2	0
Foot (2)	1	1	2	0	2	0	2	0	2	0	2	0	2	0	1	1	1	1
Eye (2)	1	1	2	0	2	0	2	0	2	0	2	0	2	0	2	0	1	1
Prostate (1)	0	1	1	0	1	0	1	0	1	0	1	0	1	0	0	1	1	0
Kidney (1)	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
Total (62)	25	37	54	8	49	13	60	2	62	0	60	2	62	0	36	26	50	12

Table 4: Distribution of anemia according to sex

S. No	Malignancy	Females	Males	Total
1	Breast	12	0	12
2	Cervix	10	0	10
3	Ovary	3	0	3
4	Larynx	0	2	2
5	Kidney	0	1	1
6	Prostate	0	1	1
7	Penis	0	2	2
8	Eye	1	1	2
9	Uterus	2	0	2
10	Foot	1	1	2
11	Colon	0	1	1
12	Oesophagus	3	2	5
13	Stomach	1	4	5
14	Rectum	0	2	2
15	Oral cancer	1	10	11
	Total	35	27	62

Table 5: Distribution of anemia according to sex

S. No	Sex	Total	Anemic	Total %
1	Females	35	23	65.71
2	Males	27	14	51.85

Table 6: Distribution of TLC and platelet count in 62 cases of various malignancies

TLC	No of cases	Percentage	Platelet count (lakhs/cumm)	No of cases	Percentage
< 4	0	0	<1.5	5	8.06
4-11	54	87.10	1.5-4	49	79.04
11-50	8	12.90	>4	8	12.90

Discussion

Anemia is a frequent complication in cancer patients, both at diagnosis and during treatment. In the European cancer anemia survey (ECAS), 39 % of patients were anemic at time of enrollment, 67 % had anemia during chemotherapy.

Multiple factors are implicated for causation of anemia in such patients, iron deficiency anemia was the most dominating feature.

In the present study, Anemia was the most common haematological parameter observed which were seen in 37 cases out of 62 cases which corresponds to the study done by various other authors.

It can be difficult to distinguish the anemia that results from treatment from anemia caused due to other factors. Chemotherapeutic agents such as alkylating agents including the nitrosoureas, dactinomycin and cisplatin can suppress the production of red blood cells. Drugs that inhibit DNA synthesis can produce megaloblastic anemia and such drugs include hydroxyurea, cytarabine, methotrexate, 5-fluorouracil, azathioprine and 6 mercaptopurine.

Bleeding either overt or occult may be the clue that leads to initial diagnosis of cancer. When blood loss persists, iron deficiency may develop. Iron deficiency anemia is diagnosed by demonstration of a low level of serum iron and an elevated level of total iron binding capacity however when chronic illness such as metastatic cancer also exists the diagnosis the diagnosis of iron deficiency may be difficult to establish.

In a study done by Jaspreet singh on 50 cases of histologically proven cases, leukocytosis was observed in 14 cases and 11 cases out of 15 were neutrophilic leukocytosis. Leukocytosis was observed in 8 cases out of 62 cases which constituted 12.90 % in our study.

Malignancies are associated with thrombocytosis however, the mechanism of its development remains unclear. One possibility is postulated is host response to malignancy which causes bone marrow stimulating cytokines such as IL-6, IL-1 and macrophage colony stimulating factor. Abnormal platelet counts were seen in 13 cases out of 62 cases in present study and study done by anju gupta relatively higher cases of thrombocytosis were seen in 17 cases out of 50 cases.

Conclusion

Anemia most often is the sole manifestations of cancer and during the diagnostic work up of anemia unmasks a hidden malignancy like a gastrointestinal tract adenocarcinoma, refractory iron deficiency anemia may be sole manifestation or a myelodysplastic syndrome. Iron deficiency anemia should be thoroughly investigated to rule out any malignancy

Early detection of abnormal parameters like anemia, leukocytosis, thrombocytosis, helps in better management and thus reduce morbidity and improve patient care..

References

1. Gupta A, Singh T, Gupta S. Haematological manifestation in non hematological malignancies. International journal of Bioassays 4.10. 2015, 4376-4378.
2. Singh J, Mehra V, Neki NS. Hematological manifestations in non hematological malignant neoplasms. Int J Curr Res Bio Med. 2018; 3(5):78-82.
3. Ludwig H, Belle SV, Lee PB, Birgegard G. The European cancer anemia survey: a large, multinational, prospective survey defining the prevalence, incidence and treatment of anemia in cancer patients. European journal of cancer. 2004; 40:2293-2306.

4. Gunduz E, Durgun HN, Gunduz M, Ozen M. Standard blood parameters in anemic patients with cancer and with other diseases. J Biomed Res. 2017; 28(18):7955-9
5. Naser E, Moller H, Fredberg U, Frystyk J, Vedsted P. Routine blood tests and probability of cancer in Patients referred with nonspecific serious symptoms: a cohort study. J Biomed Central. 2017; 17(817):3845-9.
6. Kifle E, Hussein M, Alemu J, Tigench W. Prevalence of anemia and associated factors among newly diagnosed patients with solid malignancy at tikur anbessa specialized hospital, radiotherapy center, Addis Ababa, Ethiopia. J advances in hematology. 2019, 1-8.
7. Khan FA, Joshi SC, Shukla AN. Anemia and cancer treatment: a conceptual change. Singapore Med J. 2018; 49(10):759-64
8. Gasper BL, Sharma P, Das R. Anemia in malignancies: Pathogenetic and diagnostic considerations. J Hematology. 2015;20(1):18-25
9. Ikeda *et al.* Poor prognosis associated with thrombocytosis in patients with gastric cancer. Annals of surgical oncol. 2002; 9(3):287-91
10. Jamil K, Kalyani P, Perimi R, Kameshwari SV. Assessment of severity of anemia and its effect on the quality of life (QOL) of patients suffering with various types of neoplasia. J Biology and Medicine. 2009; 1(3):63-72
11. Qiu Mz *et al.* Incidence of anemia, leukocytosis and thrombocytosis in patients with solid tumors in china. J Tumor Biol. 2010; 31:633-41
12. Naoum FA. Iron deficiency in cancer patients. Brazilian J Hematology and hemotherapy. 2016; 38(4):325-30
13. Steinberg D. Anemia and Cancer. A Cancer j of Clinicians. 1989; 39(5):296-304