#566(FPN 424): The storm Paraneoplastic Leukemoid Reaction-a bad Prognostic Factor

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Abstract

Background: Paraneoplastic leukemoid reaction (PLR) is well described entity where white blood cell (WBC) count increase ≥50000/mm3 in association with malignancy. Recent research works have demonstrated that there are relationships between PLR activated by intratumoral production of granulocyte colony stimulatory factor (G-CSF), the RAS/RAF/MEK pathway and tumorigenesis. It may even see before diagnosis of malignancy. It may even see before diagnosis of malignancy. It is too important to understand the cause of high WBC count to start specific proper treatment or change treatment protocol because many clinicians delayed to start treatment that harmful for patients.

Methods: The study was an observational study. Study period was January 2022 to June 2022

Results: Of total 350 patients, PLR was found in only 24 (6.86%), male and female ratio was 1.4:1. Age range of patients were from 32 years to 85 years and average was 60 years. Among them, carcinoma lung 6(25%) where 4(66.66%) patients were metastatic to liver and 2(33.33%) patient had localized disease; carcinoma gall bladder 4(16.66%) where 4(100%) had metastasis to liver; carcinoma unknown primary 4(16.66%) with metastasis to 1(25%) in pericardium and 3(75%) in liver and lung; carcinoma buccal mucosa 4(16.66%) without metastasis; recurrence carcinoma of cervix with gut metastasis 2(8.33%); metastatic prostate cancer 2(8.33%) and carcinoma urinary bladder 2(8.33%). Infections were ruled out methodically by culture and sensitivity of blood, urine, bone marrow but none showed any growth. 14(58.33%) patients were on specific treatment and 41.67%) patients were on supportive management after PLR develop. 23(95.83%) patients developed PLR after diagnosis of cancer or during cancer treatment or many days thereafter. Only 1(4.17%) patient developed PLR before diagnosis of malignancy. 23(95.83%) patients developed PLR after diagnosis of cancer or during cancer treatment or many days thereafter. Only 1(4.17%) patient developed PLR before diagnosis of malignancy. WBC count ≥ 50000/mm3 were found in 23(95.83%) and only 1(4.67%) patient had 45000/ mm3. Neutrophil count ≥90% were documented in 14(58.33%) patients and ≥85% in 10(41.67%). Platelet count were within normal range in 12(50%) patients and high in 12(50%). Bone marrow examinations16(66.67%) showed Neutrophilic leukocytosis in 14(87.5%) patients and 2(12.5%) showed Neutrophilic leukocytosis with megakaryocytes. Duration of death from development of PLR from 4 days to 240 days and average time of death was documented within 72 days.

Conclusion: In developing countries, patients were underwent investigations repeatedly for a long period for PLR that delayed diagnosis, ultimately delayed treatment and we lost patients

Introduction

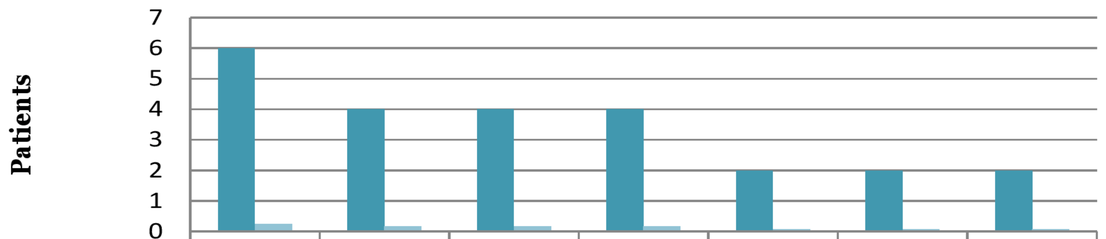
A leukocytosis with a WBC count of more than 50000/L, primarily composed of mature neutrophilia or neutrophil precursors, is known as a leukemoid reaction (LR). Under a variety of circumstances, such as infections, the use of therapeutic drugs, drunkenness, hemolysis, or malignant tumors, these phenomena may take place. Malignancy patients may have paraneoplastic syndrome, which is caused by responses to hormones or cytokines generated by tumor cells rather than tumor invasion or metastasis.

Patients that present with paraneoplastic syndrome with LR are diagnosed with paraneoplastic leukemoid reaction (PLR). PLR is uncommon and only happens in a tiny percentage of individuals with solid tumors, such as skin cancer, lung cancer, gliomas, bladder cancer, colorectal cancer, melanomas, and others.

PLR in solid tumor patients always indicates a bad result, and the majority of patients die within 6 months. In most cases, the additional white cells are mature neutrophils, and they are responsible for stimulating tumor growth.

Here, we present an observational study of PLR and the study period was January 2022 to June 2022. Only 24 (6.86%) of the 350 patients tested positive for PLR, with a male to female ratio of 1.4:1. Patients ranged in age from 32 to 85 years old, with an average of 60 years. Adenocarcinoma accounted for 12 (50%), squamous cell carcinoma accounted for 8 (33.33%), and undifferentiated carcinoma accounted for 4 (16.66%). Culture and sensitivity of blood, urine, and bone marrow ruled out infections, but none indicated any growth.

Distribution of Cancer Patients



	Lung Carcinoma	Gall bladder Carcinoma	Unknown Primary Carcinoma	Buccal Mucosal Carcinoma	Cervical Carcinoma with Gut Metastasis	Metastatic Prostate Cancer	Urinary Bladder Carcinoma
Number	6	4	4	4	2	2	2
Percentage	25%	16.66%	16.66%	16.66%	8.34%	8.34%	8.34%

Method

Modern treatment guideline always prefers multidisciplinary team to treat a cancer patient but unfortunately in developing countries it is ignored. It was documented that, patients were underwent investigations repeatedly for a long period for searching high WBC count without thinking PLR or without consultation with oncologist that delayed diagnosis, ultimately delayed treatment and we lost patients. In our research work, one patient died without specific treatment because PLR developed before cancer diagnosis and delayed 3 months only for searching high WBC count. So high WBC count with infections or other specific cause should take seriously.

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Result

Among 350 patients diagnosed malignancy either before or after development of leukemoid reaction, PLR criteria was found in only 24 (6.86%), male patient was 14 and female patient was 10; ratio was 1.4:1. Age range of patients were from 32 years to 85 years and average was 60 years. Among them, carcinoma lung 6(25%) where 4(66.66%) patients were metastatic to liver and 2(33.33%) patient had localized disease; carcinoma gall bladder 4(16.66%) where 4(100%) had metastasis to liver; carcinoma unknown primary 4(16.66%) with metastasis to 1(25%) in pericardium and 3(75%) in liver and lung; carcinoma buccal mucosa 4(16.66%) without metastasis; recurrence carcinoma of cervix with gut metastasis 2(8.33%); metastatic prostate cancer 2(8.33%) and carcinoma urinary bladder 2(8.33%). On histopathological basis, adenocarcinoma was 12(50%), squamous cell carcinoma 8(33.33%) and undifferentiated carcinoma were 4(16.66%). Infections were ruled out methodically by culture and sensitivity of blood, urine, bone marrow but none showed any growth. 14(58.33%) patients were on specific treatment and 41.67%) patients were on supportive management after PLR develop. 23(95.83%) patients developed PLR after diagnosis of cancer or during cancer treatment or many days thereafter.

Only 1(4.17%) patient developed PLR before diagnosis of malignancy. Hemoglobin level ≥10 g/dl were found in 10(41.67%) patients, 8-10 g/dl in 6(25%), ≤8 g/dl were found in 8(33.33%); WBC count ≥50000/mm3 were found in 23(95.83%) and only 1(4.67%) patient had 45000/ mm3. Neutrophil count ≥90% were documented in 14(58.33%) patients and ≥85% in 10(41.67%). Platelet count were within normal range in 12(50%) patients and high in 12(50%). Bone marrow examinations16(66.67%) showed Neutrophilic leukocytosis in 14(87.5%) patients and 2(12.5%) showed Neutrophilic leukocytosis with megakaryocytes. Duration of death from development of PLR from 4 days to 240 days and average time of death was documented within 72 days. It was documented that patients with leukemoid reaction rapidly deteriorate those who suffered from urinary bladder cancer followed by gall bladder cancer, prostate cancer and carcinoma unknown primary.

Conclusion

Modern treatment guideline always prefers multidisciplinary team to treat a cancer patient but unfortunately in developing countries it is ignored. It was documented that, patients were underwent investigations repeatedly for a long period for searching high WBC count without thinking PLR or without consultation with oncologist that delayed diagnosis, ultimately delayed treatment and we lost patients. In our research work, one patient died without specific treatment because PLR developed before cancer diagnosis and delayed 3 months only for searching high WBC count. So high WBC count with infections or other specific cause should take seriously.