ABSTRACT

CLINICO-HEMATOLOGICAL STUDY IN PANCYTOPENIA PATIENTS PRESENTING TO TERTIARY CARE HOSPITAL

Introduction

Pancytopenia is a triad – anaemia, leukopenia and thrombocytopenia. Incidence worldwide is 2 to 5 cases/million population per year and 5 to 12 cases/million population per year in the United States (and in other industrialized countries). Incidence is approximately twice as high in Asian countries. Peak incidence between ages 15 to 25 and 65 to 69 [1]. Different studies shows variation in aetiology of pancytopenia. This variation not only appreciated in different countries but also in different regions of a single country. Many studies from north and south India have implicated megaloblastic anaemia as the most common cause of pancytopenia. A plastic anaemia were found to be the most common cause of pancytopenia in a study which was undertaken in Nepal [2]. Aplastic anaemia followed by infections such as malaria and leishmaniasis were the major causes of pancytopenia reported from Bangladesh [3]. In contrast, neoplastic diseases and radiation have been reported as the most common cause of pancytopenia, in Europe and Israel [4]. Pancytopenia with markedly hypocellular marrow and normal cell cytogenetics. Pancytopenia is an important clinical - haematological entity encountered in our day-to-day clinical practice. It is not a disease entity but a triad of findings that may result from a number of disease processes – primarily or secondarily involving the bone marrow. Treatment and prognosis of patients with pancytopenia are governed by the cause and severity of the underlying disease [1].

Aim and Objectives

To diagnose different conditions producing Pancytopenia on the Basis clinical, hematological and/or Bone Marrow Studies.

To estimate the frequency of different diseases producing Pancytopenia.
**Materials and Methods**

Hospital-based prospective study

**Sample size:** 1-year duration [July 2016- July 2017]

**Inclusion criteria:**

- Both sexes, age of 18yrs and above. Haemoglobin <10g/dl. Leucocyte count <4000/cu.mm. Platelet count <100000/cu.mm [5]
- The study will be carried out on patients admitted in PSGIMSR (medical ward, IMCU, MICU) in pancytopenia patients.

**Exclusion criteria:**

- All patients below the age of 18yrs

The study is based on prospective collection of data in pancytopenia patient who fulfilled the inclusion criteria stated above and admitted in the medical ward in a tertiary care centre (PSGIMS&R) where systematic computer coding for the registry is used.

A written informed consent was obtained from all the patients after having fully explained the purpose, protocols, and risk involved in the study. All the patients underwent a detailed medical history and full physical examination followed by blood sampling for investigations i.e complete blood count with peripheral picture, absolute reticulocyte count, erythrocyte sedimentation rate, fasting serum vitamin B12 and folic acid level, anaemia profile, TSH, T3, T4, smear for malarial parasite, liver and renal function test, and viral markers (HBsAg, HCV, HIV), chest x-ray and ultrasonography of abdomen and/or diagnostic Bone marrow aspiration and trephine biopsy subsequently carried out under aseptic precaution after obtaining written consent from the patient or guardian. If needed Coombs test, EBV, CMV, ANA IF, ANA profile, serum lactate dehydrogenase, uric acid Rheumatoid factor, tuberculin test, serum coagulation profile,
fibrinogen and D-Dimer and special investigation – like Immunophenotyping, cytogenetic, lymph node biopsy, immune electrophoresis etc. Data was entered and analyzed in statistical software. Frequency and percentage would be computed for categorical variables like age and sex distribution, physical findings, peripheral blood picture, haematological parameters and common causes leading to pancytopenia.

**Conclusion**

From our study it can be proposed that inspite of numerous etiology available for pancytopenia and its various manifestations the most common etiology is the megaloblastic anaemia.

And the most common reason for megaloblastic anaemia is vitamin b12 deficiency. So it can be suggested that screening of b12 deficiency should be the intial screening test for evaluation of megaloblastic anaemia irrespective of the diet of the patient because it is not only the most common cause of megaloblastic anemia but is also present in patients who consume mixed diet. Other investigations like UGI scopy can be followed through if needed based on clinical scenario. Other conditions like malignancy, hypersplenism and aplastic anaemia which are the next most common cause in our study should also be kept in mind while ordering further investigations

The findings of the above study also indicates that prompt identification of patients with megaloblastic anemia and treating the underlying cause in intial stage itself can reduce the incidence of pancytopenia and its various complication.

**Limitations**

1. This study was conducted in particular region & most of the study population were natives of the same location, hence the race and regional variability cannot be comment upon
2. Few of the patients in this study denied bone marrow biopsy and UGI scopy hence, those finding not included in this study
3. Few of these patients were not followed through due poor patient compliance hence, response to therapy were not looked into in detailed.

**Recommendations**

- All patients presenting with pancytopenia should be evaluated for megaloblastic anaemia and other correctable factors
- Vitamin B12 & folate assay are useful tests in the evaluation of megaloblastic anaemia
- Upper GI endoscopy & deep duodenal biopsy should be done in all patients diagnosed to have megaloblastic anaemia to evaluate for tropical sprue
- Bone marrow aspiration & biopsy need not be done in most patients with a clinical picture of megaloblastic anaemia

**Keyword:** Pancytopenia, Leukopenia, Thrombocytopenia, Megaloblastic Anaemia