

A Case of Pulmonary Tuberculosis with Pancytopenia

M. M. Puri*, Kumud Gupta**, Ramesh Pal Singh***, S.P. Gupta****

Chest Physician*, Pathologist**, Senior Resident***, Chief Medical Officer****, LRS Institute of TB and Allied Diseases, Sri Aurobindo Marg, New Delhi 110030

Correspondence : Dr. M.M. Puri, Chest Physician, LRS Institute of TB, and Allied Diseases, Sri Aurobindo Marg, New Delhi-110030

INTRODUCTION

A variety of hematological abnormalities have been described in association with pulmonary tuberculosis¹. Pancytopenia has been reported occasionally in association with tuberculosis. It has been more consistently documented in patients with miliary tuberculosis², and suggests the possibility of granulomatous infiltration of bone marrow, hypersplenism, proliferative disorder of reticulo-endothelial system, or some unrelated disease process. But at times cause is not discernible after investigations. Such cases need further evaluation to know the etiology of pancytopenia for appropriate management of the patient.

CASE REPORT

A 35 year old male was admitted to LRS Institute of Tuberculosis and Allied Diseases, New Delhi, with 4 month history of fever, cough, expectoration, diarrhoea, loss of appetite, weight loss, weakness and breathlessness on exertion. There was history of smoking and alcohol abuse. His father died of tuberculosis 10 years ago. He had pulmonary tuberculosis a year ago for which he was treated for six months with improvement. The antituberculosis drugs were stopped 6 months before admission. On clinical examination patient was febrile (38.5°C), weighing 35 kg, there was moderate pallor and mild pedal oedema. There was no peripheral lymphadenopathy, hepatomegaly or splenomegaly. The chest radiograph showed bilateral extensive disease. Sputum for A.F.B. was positive. ELISA Test for HIV was negative. Serum bilirubin SCOT, SGPT, blood urea, serum creatinine and serum electrolytes were within normal limits.

The initial blood examination showed marked anemia (Hb = 4.4g/dl), reduced leukocyte count (TLC - 2500/cumm) with neutropenia and lymphopenia and a marked reduction in the platelet count (20,000 platelets/cu mm). The red cells were normocytic and normochromic and showed moderate anisocytosis. Poikilocytosis was minimal. No immature cell was seen. No other abnormality was seen.

Treatment with streptomycin, rifampicin, isoniazid, pyrazinamide and ethambutol was started on the same day. Two units of whole blood was also transfused. There was no significant improvement in blood picture except that a rise of 1.3g/dl was noticed in the hemoglobin concentration on third day, which again dropped down to the initial levels on the fourth day.

Bone marrow aspiration was performed to evaluate the cause of pancytopenia. The aspirate was normocellular and showed normal maturation of all the three series. The bone marrow reaction was normoblastic. Distribution of cells was within normal range. Bone marrow iron was within normal limits. Peripheral blood smears and bone marrow did not reveal any evidence of megaloblastic anaemia. A significant improvement in the total leucocyte count was seen on the tenth day of anti tuberculosis treatment. The platelet count also rose to the normal values by the 20th day. There was an increase in the haemoglobin concentration but was the last parameter to show improvement. By the 28th day, all the three parameters showed a significant improvement.

Sequential Haematological Profile of the Patient

	Day of Admission	Day 10	Day 20	Day 28
Hb (g/dl)	4.4	5.3	6.0	11.1
TLC (cells/cu mm)	2500	8400	13,500	14,500
DLC	P=76% L=24% E=0% M=0% B=0%	P=84% L=14% E=02% M=0% B=0%	P=88% L=08% E=02% M=02% B=0%	P=85% L=10% E=02% M=03% B=0%
Platelet Count (cells/cu mm)	20,000	70,000	2,92,000	3,29,000
Hematocrit (%)	13.5	16.5	19.2	28.2
MCV (fl)	97.3	91.1	89.0	87.4
MCH (pg)	31.7	29.3	27.8	27.6
MCHC (g/dl)	32.6	32.2	31.2	31.4

T = Total Leukocyte count

P = Polymorph

L = Lymphocyte

E = Eosinophil

M = Monocyte

B = Basophil

DLC = Differential leukocyte count

MCV = Mean Corpuscular volume

MCH = Mean Corpuscular Haemoglobin

MCHC = Mean Corpuscular Haemoglobin Concentration

DISCUSSION

Pancytopenia with a cellular bone marrow has been described very occasionally in cases of tuberculosis. No finding in this case suggested the possibility of hematological malignancy, infiltrative diseases of the bone marrow or any other associated disease process. No suggestive feature of ineffective haematopoiesis with formation of defective cells is seen. Furthermore, the counts showed a significant improvement with the institution of anti-tuberculosis treatment; thus showing that the pancytopenia was due to the tuberculosis disease process itself with no other associated

pathology. As these results have been described in a very few patients, the clinical implications of these findings are unclear. Further studies are needed to determine whether these changes are the direct result of mycobacterial infection on the release of haematopoietic cells from the marrow.

REFERENCES

1. Glasser RM, Walker RI, Herion JC. The significance of hematologic abnormalities in patients with tuberculosis. *Arch Intern Med* 1970;125:691-695.
2. Cooper W: Pancytopenia associated with disseminated tuberculosis. *Ann Intern Med* 1959;50:1497-1501.

Medical News

PTI Science Service

THALASSEMICS FIND NEW HOPE WITH AIIMS BONE MARROW REGISTRY

Hundreds of thalassemia patients are hopeful that they would soon find a matching bone marrow and become normal, courtesy All India Institute of Medical Sciences' (AIIMS) Asian Indian Donor Marrow Registry (AIDMR).

About 10,000 Indian children born every year suffer from thalassemia. In this genetic disorder, the body can not make enough haemoglobin and the red blood cells are broken down much earlier as compared to normal life of 120 days.

“The only permanent cure for thalassemia is bone marrow transplantation (BMT) which incurs a one-time investment of Rs six lakhs as against a lifelong expenditure of Rs two lakhs a year”, said the head of the hematology department of Christian Medical College (CMC), Vellore, Dr Mammen Chandy.

AIIMS with its recently established Asian Indian Donor Marrow Registry (AIDMR) of voluntary donors maintains a record of more than 2000 Indian members and has liaison with the American National Marrow Donor Programme (with 2.5 million donors) and Hollands Bone Marrow Donor Worldwide with human leucocyte antigen (HLA) data from 40 donor registries in 28 countries.

Though the chance of finding a donor whose HLA matches with that of the patient's is one in a million, through the registry we are certain to find matches for many as it grows by the day”, the head of the immunogenetics and histocompatibility department of AIIMS, Dr N K Mehra, told PTI.

A successful marrow transplant depends on finding a suitably matched donor with the recipient. In thalassemia, three sources of marrow are HLA of identical healthy siblings, registries of HLA-typed volunteers and unborn siblings whose HLA is tested before birth and matched post-natally.

If an HLA-matched sibling is not available, extended family testing is done to include first cousins or near relatives. Because of the extreme degree of genetic diversity in the HLA system, it is often difficult to find an optimally matched donor in random population, Dr Mehra, who had

assisted Dr Donald Thomas in 1981 during the first ever BMT in Seattle, USA, said.

Dr Mehra said about 30 per cent of patients find a matched donor from among the family members. In offsprings belonging to the same genetic pool, there is one to eight per cent probability of either the parent or another first degree relative to be HLA identical.

“But in actual practice, the number of patients having an HLA-identical sibling is not high”. Dr Mehra said, adding this may be because of the relatively small size of thalassaemic families.

Hence for the majority of patients without a matched sibling donor, an unrelated donor transplant is the only option.

“Because there are a large number of tissue types, it is necessary to maintain an extremely large registry of voluntary donors willing to donate marrow and haeme (the haemoglobin protein) producing stem cells”, a senior research officer of AIDMR who has earlier worked with the Singapore marrow registry, Dr Uma Kanga, said.

The AIDMR aims to register one million volunteers from all ethnic and racial backgrounds.

“This is a tall order that requires participation of HLA specialists, oncologists, transplant surgeons, social scientists, oncologists, transplant surgeons, social scientists, voluntary agencies and philanthropic organisations”, Dr Kanga said adding, mass awareness on thalassemia and its probable cure is still lacking in India.

Several requests are received every week by the AIDMR, mostly from Indian patients staying abroad seeking HLA identical donors.

The Centre has searched for thalassemia patients of Indian origin in Thailand and Malaysia and has found one HLA identical donor as yet. The preliminary searches are made free of cost and further investigations, if required, are chargeable by the donor centre.

“More than 24 per cent of the total requests for an unrelated HLA-matched donor are met with reasonable degree of success by the international collaboration of various registries”, Dr Mehra said.

However, he said, the biggest hurdle for BMT to become a solution for thalassemia is the huge expense involved in the treatment and the lack of awareness among the masses which is major block in voluntary donation.