

# An Approach to Aplastic Anaemia

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## Definition

Pancytopenia is defined as a combination of Anaemia, Leucopenia and Thrombocytopenia.

There are different mechanisms involved in the development of pancytopenia. They are as follows:

1. Defect in haematopoiesis with death of cells in marrow.
2. Rapid removal of formed defective cells from circulation.
3. Sequestration &/or destruction of cells by action of antibodies.
4. Trapping of normal cells in a hypertrophied & overactive reticulo-endothelial cells.

## Causes of Pancytopenia

1. Aplastic anaemia
  - a. Idiopathic
  - b. Idiosyncratic
  - c. Inevitable
  - d. Immunologically mediated
  - e. Infective
2. Pancytopenia with normal or increased bone marrow cellularity
  - a. Vitamin B<sub>12</sub> & folate deficiency
  - b. Hypersplenism
  - c. Myelodysplastic syndrome
3. Bone marrow replacement
  - a. Haematological malignancy
  - b. Non-haematological metastatic tumours
  - c. Myelofibrosis
  - d. Osteoporosis
  - e. Storage cell disorder
4. Paroxysmal nocturnal Hemoglobinuria (PND)
5. Miscellaneous
  - a. Disseminated tuberculosis
  - b. Brucellosis
  - c. Septicaemia
  - d. Systemic lupus erythematosus
  - e. Malaria

Many diseases may present as pancytopenia. In Nepal, the most common cause is aplastic anaemia but many other diseases may mimic pancytopenia. In this study, we have analyzed various causes of pancytopenia seen at our centre over the last 7 years (1997 to 2004 A.D.).

## Inclusion criteria

Presence of all three of the following

- Haemoglobin level: < 9 gm%  
 Total leucocyte count: < 4,000/ cu. mm  
 Platelets: < 1,40,000/ cu. mm  
 Reports of bonemarrow examination were analysed.

## Exclusion criteria

- Patient on cytotoxic drugs.  
 Obvious leukaemic cells in peripheral blood.

## Results

Disease	Total No. of patients	Male	Female
Aplastic Anaemia	6	4	2
Megaloblastic Anaemia	2	2	0
Hypersplenism	1	1	0
Multiple Myeloma	1	1	
	10	8	2

## Aplastic anaemia

Presentation	No. of Patients
Symptoms:	
Weakness	6
Bleeding	5
Fever	5
Shortness of breath	6
Signs:	
Pallor	6
Petechiae	5
Hepatomegaly	1
Splenomegaly	1
Aetiology:	
Idiopathic	5
Chloramphenicol	1

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Diagnosis: All the cases were diagnosed on the basis of bone marrow aspiration and biopsy. Bone marrow aspiration is inconclusive.

### **Megaloblastic anaemia**

Presentation

Symptoms

Weakness

Shortness of breath

Signs

Pallor

Mild icterus

Hepatomegaly

Peripheral blood smear: Dimorphic

Bone marrow aspiration: Megaloblastic changes

Hypersplenism

Presentation

Heaviness in left hypochondrium

Splenomegaly

Upper gastro-intestinal endoscopy: oesophageal varices

Diagnosis: cirrhosis of liver

Multiple myeloma

Presentation

Pyrexia of unknown origin

Splenomegaly

Peripheral blood smear: inconclusive

Bone marrow study: Diagnostic

### **Discussion**

Many diseases may present as pancytopenia. Most common is aplastic anaemia but sometimes hypersplenism, megaloblastic anaemia, multiple

myeloma may present as pancytopenia. Bone marrow aspiration and biopsy are needed for the diagnosis. Many patients with megaloblastic anaemia are being treated with iron alone without proper diagnosis. Long standing anaemia should be subjected to bone marrow aspiration.

### **Treatment of aplastic anaemia**

There are different treatment modalities of aplastic anaemia. Some are very costly and some are unavailable in our country. We have treated all cases of aplastic anaemia with ciclosporin.

Treatment with ciclosporin leads to improvement in the patient condition with less frequent requirement of blood transfusion. They are the best candidates for bone marrow transplantation.

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