Paediatric aplastic anaemia is difficult to discriminate from paediatric myelodysplasia and many other inherited bone marrow failure syndrome (IBHF). The difficulty in diagnosis arises because cytopenia and marrow hypoplasia in paediatric age group also comes with several non haematological disorders (Box). In this issue Gupta et al presented cytogenetic profile in 42 children with varying severity of disease. Five patients showed cytogenetic abnormality, and two of these five patients had monosomy 7 and 7q abnormality, one patient had trisomy 8 and one had 5q abnormality. This result is deceptive because the investigators started the study with 71 patients. In these 71 patients, 29 had uninformative study. It would have been proper to document five abnormal cytogenetics out of 71 patients (8%) rather than 42 patients as described in the paper. When marrow is hypocellular it is difficult to distinguish between idiopathic aplastic anaemia, myelodysplastic syndrome (MDS), and IBMF syndromes. The investigators have correctly excluded Faconi’s anaemia by appropriate DNA stress testing.

One of the deficits of the present study is the lack of detailed morphological study with bone marrow smear, trephine biopsy and marrow immune histochemistry. These studies are important because there are significant differences in paediatric MDS and paediatric aplastic anaemia in those investigative parameters as shown in the Table. Broadly in MDS there are foci of cellular hyperplasia with loss of proper differentiation, megakaryocytic cells may not be morphologically discernable but may be revealed by immunohistochemistry, whereas in aplastic anaemia generally foci of hyperplasia are not seen, even if present, there are no CD61 stainable micromegakaryocytes or CD34+ cells and differentiation is normal.

The discrimination between aplastic anaemia and refractory cytopenia of childhood (RCC) which is the other name given for childhood MDS may not be clear cut. Experimental as well as clinical studies have shown that a proportion of cases with severe marrow damage leading to marrow aplasia may progress on follow up to MDS and even a small proportion of these cases will progress to acute myeloid leukemia (AML). It has been questioned whether granulocyte-colony stimulating factor (G-CSF) therapy in non

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**Box. Disorders in children with hypoplastic bone marrow**

**Non haematological disorders:**
- Infections: Cytomegalovirus (CMV), Epstein-Barr virus (EBV), Parvovirus, Herpes virus and Varicella virus infections.
- Deficiency of Vitamin B₁₂/folate/Vitamin E
- Metabolic disorder (Mevalonate kinase deficiency)
- Rheumatic diseases
- Mitochondrial diseases (Pearson syndrome)

**Haematological disorders:**
- Inherited bone marrow failure disorders
  - (Fanconi’s anaemia, dyskeratosis congenital, etc.)
- Severe aplastic anaemia
- Refractory cytopenia of childhood
  - (RCC or childhood MDS)
- Paroxysmal nocturrol haemoglobinuria (PNH) with bone marrow failure
- Hypoplastic marrow preceding acute lymphoblastic leukemia (ALL)
- Haemophagocytic lymphohistiocytosis
- Autoimmune lymphoproliferation disorder
responders to immunosuppressive therapy is a risk factor for the development of MDS, however, MDS developing in donor cells long after allogenic stem cell transplantation suggests a microenvironmental defect in this condition. Involvement of chromosome 7 has been shown to be frequent in children with MDS in contrast to chromosome 5 as has been described for adult cases, other common chromosomal abnormalities like trisomy 8 and trisomy 21 are reported to be other common abnormalities. Trisomy 8 has also been reported by Gupta et al. There are paucity of data on cytogenetics in paediatric aplastic anaemia from this country and elsewhere in the world probably because of technical difficulty in obtaining enough cells in cycle in aplastic anaemia. Modern FISH based technology will go a long way in reducing this problem by providing information on chromosomal abnormality in interphase cells, moreover, techniques are now evolving where karyotyped cells can also be immunophenotyped to provide exact lineage and differentiation status of these cells.

In view of paucity of data on cytogenetics of paediatric aplastic anaemia, the article by Gupta et al is an important addition to the world literature. However, there are two important weaknesses in this paper, viz. lack of detailed morphological data of the patients on marrow smear and trephine and secondly a large number of failed karyotypes and so called normal karyotypes were not studied by molecular cytogenetics (FISH and other hybridization techniques). In fact as these studies are possible on old and preserved smears and other specimens, serious attempts should be made to complete these studies on all 71 cases and chromosomal defects should be correlated with duration of aplasia rather than first time presentation to a given centre.

The moot question whether clonal chromosomal abnormality is a part and parcel of biology of a small subset of aplastic anaemia or it is an evolving complication in the natural history of the disease through MDS or not has not been answered by this study. X chromosomal inactivation studies have shown that up to 20 per cent of aplastic anaemia patients may have clonal haemopoiesis and similar evolution of PNH like clones in the same disease also points to evolution of clonal haemopoiesis in this disease.

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