Article about Aplastic anemia

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Aplastic anaemia is a rare disease in which the bone marrow and the hematopoietic stem cells that reside there are damaged. This causes a deficiency of all three blood cell types (pancytopenia): red blood cells (anemia), white blood cells (leukopenia), and platelets(thrombocytopenia). It is also called bone marrow failure and can happen suddenly (acute) or develop over a period of time (chronic). Bone marrow is a substance found in the spongy centre of bones and is where blood cells are formed. The bone marrow forms 'stem cells' which develop into any of the three types of blood cell – red blood cells, white blood cells and platelets.Normally, the bone marrow controls the number of blood cells formed and released into the blood stream, so the body remains healthy. Too many or too few of any of the blood cells can cause problems.The number of blood cells is often referred to as a blood count and is often separated into the different types of blood cells.Red blood cells – about three million red blood cells are produced by the bone marrow every second. They carry a protein called 'haemoglobin' which carries oxygen to all parts of the body providing energy.The normal level of haemoglobin in a child's blood varies with age but is around 10 to 12 grams per decilitre (g/dl). Another name for red blood cells is erythrocytes.White blood cells – these are larger than red blood cells and have different functions. The two main white blood cells are neutrophils – which fight bacterial infections – and lymphocytes – which help fight viruses like chicken pox and measles and other non-bacterial infections.

Platelets – these are much smaller than red blood cells and help the blood clot by sticking together. The normal level of platelets is between 150 and 400 x 109/l. In aplastic anaemia, all types of blood cells are reduced. This is called pancytopenia – pan means all, cyto means cells and penia means few. A bone marrow sample, which would normally contain large numbers of immature blood cells, will contain very few such cells in a patient with aplastic anaemia. A below normal number of red cells is called anaemia, reduced numbers of platelets is called thrombocytopenia and a reduced numbers of neutrophils is called neutropenia.

The most common symptom of aplastic anaemia is bruising. A child may bruise easily often without having a fall or knock. This is caused by low numbers of platelets in the child's blood stream, which reduces the blood's ability to clot. A child's gums may bleed after tooth brushing, and he or she may have nosebleeds.Sometimes, the low number of platelets shows as petechiae, which are red pinprick spots under the skin. The medical term for a low platelet count is thrombocytopenia and is categorised as a platelet count of less than 150 x 109/l.

The condition needs to be differentiated from pure red cell aplasia. In aplastic anemia, the patient has pancytopenia (i.e., leukopenia and thrombocytopenia) resulting in decrease of all formed elements. In contrast, pure red cell aplasia is characterized by reduction in red cells only. The diagnosis can only be confirmed on bone marrow examination. Before this procedure is undertaken, a patient will generally have had other blood tests to find diagnostic clues, including a complete blood count, renal function and electrolytes, liver enzymes, thyroid function tests, vitamin B12 and folic acid levels. Treating immune-mediated aplastic anemia involves suppression of the immune system, an effect achieved by daily medicine intake, or, in more severe cases, a bone marrow transplant, a potential cure. The transplanted bone marrow replaces the failing bone marrow cells with new ones from a matching donor. The multipotent stem cells in the bone marrow reconstitute all three blood cell lines, giving the patient a new immune system, red blood cells, and platelets. However, besides the risk of graft failure, there is also a risk that the newly created white blood cells may attack the rest of the body