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What is Aplastic Anaemia?

Aplastic anaemia is a rare and serious condition that occurs when inadequate blood cells are being produced in the body. This causes the body to feel fatigued and may increase the risk of uncontrolled bleeding and infections.

Aplastic anaemia is known to affect people of all ages, but it is most common in those between 10 to 20 years old or 60 to 65 years old. It can occur suddenly, or it can develop slowly and progress over some time. It can be mild or severe.

Treatment for aplastic anaemia may include medications, blood transfusions, and a bone marrow transplant also called a stem cell transplant.

What causes Aplastic Anaemia?

The most common cause of aplastic anaemia is from the body's immune system attacking and damaging the stem cells in its bone marrow.

As a result, these damaged stem cells are not able to produce blood cells properly and cause the bone marrow to be either empty (aplastic) or contain inadequate blood cells (hypoplastic).

Other factors that may affect the functions of the bone marrow and increase the risk of aplastic anaemia include:

- **Exposure to toxic chemicals**: Exposure to insecticides, pesticides, and an ingredient in gasoline called benzene has been linked to a higher risk of aplastic anaemia.
- **Side effects of certain drugs**: Some antibiotics and medications may cause aplastic anaemia.
- **Chemotherapy and radiation**: These are cancer treatments that help to kill cancer cells. However, these therapies may also cause damage to healthy cells including the stem cells in the bone marrow resulting in aplastic anaemia. However, these side effects are temporary and tend to resolve once the cancer treatment is over.
- **Pregnancy**: During pregnancy, the immune system may attack the bone marrow, thereby reducing its ability to produce blood cells.

- **Viral infections**: Viral infections affecting the bone marrow may trigger the development of aplastic anaemia. Hepatitis, cytomegalovirus, HIV, and parvovirus B19 viruses are linked to a higher risk of aplastic anaemia.
- **Autoimmune disorders**: Autoimmune disorders, in which the immune system attacks and destroys healthy cells may affect the stem cells causing aplastic anaemia.
- **Rare disorders**: Some patients with aplastic anaemia have a rare disorder called paroxysmal nocturnal haemoglobinuria. This condition occurs due to the premature breakdown of the red blood cells resulting in aplastic anaemia. In some cases, aplastic anaemia may occur in patients with a rare, inherited disease called Fanconi's anaemia. Children born with Fanconi's anaemia tend to have congenital disabilities such as abnormal growth and underdeveloped limbs.
- **Unknown factors**: In the majority of cases however, the exact cause of aplastic anaemia cannot be identified (Idiopathic Aplastic Anaemia).

What are the signs and symptoms of Aplastic Anaemia?

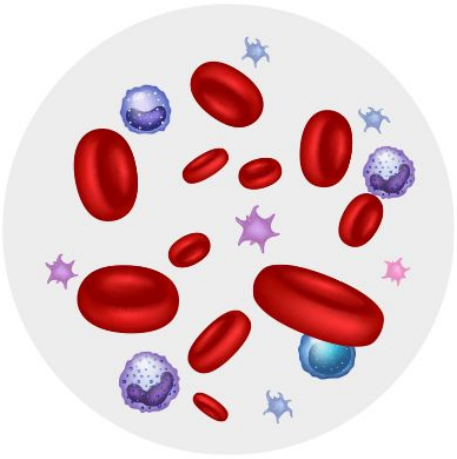
A person may not display any symptoms. If there are symptoms, they may include:

- Fatigue, shortness of breath, dizziness, headaches
- Rapid and irregular heart rate
- Pale skin or skin rash
- Frequent or persistent infections
- Fever
- Unexplained bruising, nosebleeds, bleeding gums or excessive bleeding from minor cuts

Aplastic anaemia can be temporary or chronic. If not managed properly, it may escalate and cause fatal complications.

How is Aplastic Anaemia diagnosed?

Normal



Aplastic Anaemia
(fewer red cells, white cells, and platelets)

Aplastic anaemia is diagnosed by examining samples of your blood and bone marrow.

- Blood tests: In aplastic anaemia, the levels of white cells, red cells, and platelets are lower than the normal range.
- **Bone marrow biopsy**: A bone marrow sample is drawn from a big bone and examined in a laboratory. In aplastic anaemia, the bone marrow contains fewer blood cells than normal.

How is Aplastic Anaemia treated?

The treatment for aplastic anaemia depends on the age and severity of the patient's condition. The aim of treatment is to restore blood cell production. If the condition is mild, it may resolve spontaneously without the need for treatment although this is not very common. Patients are likely need blood and platelet transfusions, and treatment to prevent and control infections.

Blood transfusions

Although **blood transfusions** are not a cure for aplastic anaemia, it can relieve the symptoms by supplementing the body with blood cells that the bone marrow cannot produce. A blood transfusion may involve the administration of red blood cells or platelets.

- **Red blood cells**: This will improve the red cell counts and relieve the symptoms of anaemia including pale skin and fatigue.
- **Platelets**: This will help to prevent excessive bleeding and bruising.

Although there is no limit to the number of blood transfusions a person can undergo, repeated transfusions might lead to complications such as:

- **Iron Overload**: The excess iron from the blood transfusions may accumulate in the body and cause damage to vital organs if left untreated. If required, medications to help remove the excess iron from the body can be given.
- **Development of antibodies against transfused blood products**: After repeated transfusions, the body's immune system may develop antibodies against the transfused blood products making them less effective. An immunosuppressant medication may be recommended to reduce the risk of this happening.

Bone marrow stimulants

This treatment involves the use of drugs (also known as growth factors or colony-stimulating factors) to stimulate the bone marrow to form new blood cells. Different growth factors help stimulate the bone marrow to react differently:

- Filgrastim (G-CSF), Pegfilgrastim (G-CSF) and Sargramostim (GM-CSF) boosts white blood cell production
- Epoetin Alfa boosts red blood cell production
- Eltrombopag helps to boosts platelet production

These growth factors are often used with immunosuppressants to improve outcome.

Immunosuppressants

Immunosuppressants such as cyclosporine and anti-thymocyte globulin (ATG), are drugs used to suppress or control the activities of the body's immune system which reduces the damage done to the bone marrow stem cells. This will allow the bone marrow to recover and produce new blood cells to relieve the anaemia symptoms.

Corticosteroids such as methylprednisolone are often used in combination with immunosuppresants.

This treatment is suitable for patients who cannot undergo a stem cell transplant or when the aplastic anaemia is the result of an autoimmune disorder. Although this treatment is effective, it may further weaken your immune system, and it is also possible for the anaemia to relapse when the patient stops taking these drugs.

Stem cell transplant

A **stem cell transplant** involves the transplant of healthy stem cells from a compatible donor to replace the patient's damaged stem cells to rebuild the bone marrow.

At present, this may be the only successful treatment for aplastic anaemia. This treatment is recommended for younger patients suffering from severe aplastic anaemia, who have a matching donor, preferably a sibling. In recent years with improved technologies in transplantation, increasingly successful results are also seen in older patients, as well as those with mis-matched family members (haplo-identical transplantation) or unrelated matched donors.