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Short Communication

Short Communication on Umbilical Cord Blood Stem Cells

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INTRODUCTION

Umbilical cord blood was once thought of as a waste product. Now, years after the first successful umbilical cord blood transplant, more families seek information about whether or not to save their newborn's cord blood. Umbilical cord blood collected at birth is a rich source of stem cells that can be used in research and in the clinic to treat diseases of the blood and immune system. With the consent of the parents, blood can be collected from the umbilical cord of a newborn baby shortly after birth.

The umbilical cord blood contains haematopoietic stem cells - similar to those found in the bone marrow - and which can be used to generate red blood cells and cells of the immune system. Cord blood stem cells are currently used to treat a range of blood disorders and immune system conditions such as leukaemia, anaemia and autoimmune diseases. These stem cells are used largely in the treatment of children but have also started being used in adults following chemotherapy treatment.

Cord blood uses

The cord blood can be used in the treatment of cancer, blood diseases like anemia, and some immune system disorders, which disrupt your body's ability to defend itself. The fluid is easy to collect and has 10 times more stem cells than those collected from bone marrow. The cord cells can treat few diseases such as following:

Malignant Diseases

- Acute lymphoblastic leukemia
- Acute myeloblastic leukemia
- Chronic myelogenous leukemia
- Hodgkin's disease
- Multiple myeloma
- Non-Hodgkin's lymphoma

Non-malignant Diseases

- Aplastic anemia
- Wiskott-Aldrich syndrome
- X-linked lymphoproliferative syndrome
- Hunter's syndrome
- Hurler's syndrome
- Lesch Nyhan syndrome
- Beta thalassemia
- Sickle cell anemia
- Blackfan-diamond syndrome
- Globoid cell leukodystrophy
- Severe combined immunodeficiency
- Osteopetrosis

Advantages

Cord blood collection is effortless and free from risks. It is ready-to-use, as it is stored frozen after collecting and testing it. In case a match a found, the unit can be reserved at once. Cord blood can be transplanted even if there is only a partial match between donor and recipient.

The recipient is at fewer risks of complications by cord blood transplant. The immune cells present in cord blood are less likely to attack the tissue of patient (graft vs. host disease) as compared to bone marrow transplant. Also, cord blood is less likely to spread certain viruses such as cytomegalovirus (CMV), which is a deadly infection that strikes transplant recipients. Nearly half of the adult population of America is the carrier of CMV in the form of latent virus. Besides this, less than 1 percent of babies are born with CMV.

Disadvantages

The volume of cord blood collection is relatively small. Cord blood transplantation exposes the patient to one of the rare genetic disorders of the immune system or blood. This disorder is not detectable while testing the cord blood sample, as it remains invisible in the child for many years. However, the chance of getting this disorder is less than 1 in 10,000. The donor cord blood stem cells come from newborn baby that is unavailable for extra cord blood donation.

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