Bone Marrow Transplants

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**Introduction**

A Bone Marrow Transplant is the type of transplantation medical procedure which involves the replacement of the previously damaged bone marrow that has been destroyed by the chemotherapy, disease or infection. The procedure is performed though the insertion of the stem cells into the bone marrow of the recipient, wherre they are bound to produce new bone marrow, from the formation of the newly created bone marrow cells (Buckley, 2004). The bone marrow transplant works by the replacing your old damaged stem cell by the new healthy ones. This will essentially help your body in the production of the platelets, red and white blood cells to avoid complications such as infections, anaemia or bleeding disorders. The source of the healthy stem cells can either come from your own body or from a donor. In the self transplantation cases or mutual transplant, the stem cells are harvested through a proper procedure, gown in the optimized conditions before the treatment and injecting them into the body. The healthy stem cells are then stored in the optimized conditions at the suitable places to use later.

Ther can be certain reasons for which you need a bone marrow transplant, which include infectious diseases, chronic infections or any cancer treatment, which are

Aplastic Anaemia: This is the disorder in which the production of the new bone marrow cells is stopped.

Marrow affecting Cancers which are lymphoma, leukemia, or a multiple myeloma

The damaging of the Bone Marrow cells during chemotherapy raises some serious concerns.

The disorder of congenital neutropenia; an inherited disorder in which the patient is suffering from recurring infections.

For the Bone Marrow Transplant, there are two types, depending upon the reason of the transplant.

**Autologous Transplant:**

This type of transplant involves the use of a person’s own stem cells. This procedure involves the use of harvesting your own cells before the beginning of the therapy. The cells are injected into the same person’s body from which they were isolated. This is only applicable in the case, if the person’s own bone marrow is healthy. This will sufficiently reduce the risk of serious complications like GVHD.

**Allogeneic Transplant:**

This type of transplant is done through the bone cells from a donor which should be the ultimate close genetic match. Often, it noticed that a relative closest on the blood line is effective, but a genetic matches can also be found from the donor registry. They are necessary if your bone marrow cells have been damaged. (Mohty, 2011) Furthermore, the Allogeneic Transplant have a tendency to raise some serious complications. For this procedure, the suppressors of the immune system are injected into the body, which makes sure that they don’t the new cells of the body, making you more susceptible to illness as your immune system will be weak.

**Complications faced in the Bone Marrow Transplant:**

Due to many cautious procedure, the bone marrow transplant can raise some serious complications which can fatal and more harming than the bone marrow disease (Imad A. Tabbara, Kathy Zimmerman, Morgan, & al, 2002). These include

GVHD; Graft-versus-host disease which is coherent in the allogenetic transparent only. The condition occurs in the body after the transplant when the stem cells isolated from the donor that are making up your new immune system, see the body’s tissues and organs as foreign cells and attacks them (Lee, 2017). The risk of this happening is probably low, but in the case of an unrelated donor, the risk increases exponentially. But, there can be a lot of reasons for this, so, it can happen to anyone, who is getting a transplant from a donor. After the successful transplantation of the cells, GVHD can occur anytime soon, but mostly, it happens when the body starts to make new heathy cells. GVHD can be acute or chronic. Acute GVHD occurs at the earlier months after the transplant and it will typically affect liver, skin and the digestive tract. Chronic GVHD typically develops later,

] Graft Failure

Cataracts

Infertility

New Cancers

Infections are more likely to occur in the case of bone marrow suppression, most common amongst is the bacterial infection. Viral, and other fungal infections can also occur.

Organ Damage: The continuous attack on the previous body cells from the new cells will abruptly damage the tissues of the organ it is attacking, which will in turn damage the organ and effects its whole functioning.

**Topic Summary and Conclusion:**

A bone marrow transplant is the procedure which involves the insertion of the new bone marrow cells into the body after the damaging of the previous ones. This will create new and healthy bone marrow cells in your body. Bone Marrow Transplant need arises when the body’s old bone marrow cells are damaged, or there has been some serious infection like Aplastic Anaemia, Lymphoma etc. There are two ways for the source of the stem cells, one is the self transplant and other from a close relative which is genetically related, termed as the donor. In the case of self bone marrow cells, the transplant is known as autologous transplant. In the case of the stem cells from the donor, the transplant is allogeneic. Autologous occurs only in the case when the patients old bone marrow cells are healthy. Allogeneic transplant occurs when the patients own bone marrow cells are damaged, and the transplant is done through a donor but this raises some serious implications like GVHD, affecting the patient in the longer run.

A bone marrow transplant can cure the disease, but can also increase the susceptibility of others. Some people have a complete bone marrow transplantation without any side effects. But, in some peope, side effects arise for a short term with severity, which varies from person to person. It is helpful to remember that majority of the cases, these are temporary and the transplant would be successful.

# **References**

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