

HIV Functional Cure Through Bone Marrow Transplant

Medicine · Answer Key · 20 Questions

1. What condition has a 63-year-old man been functionally cured of?

- A) Hepatitis B
- B) HIV**
- C) Tuberculosis
- D) Malaria

2. What medical procedure led to the functional cure of HIV in this patient?

- A) Gene therapy
- B) Chemotherapy
- C) Bone marrow transplant**
- D) Vaccination

3. From whom did the patient receive the bone marrow donation?

- A) An unrelated donor
- B) His sister
- C) His brother**
- D) A volunteer

4. What rare genetic mutation does the donor possess that confers resistance to HIV-1?

- A) CCR5 Δ 32**
- B) BRCA1
- C) CFTR
- D) APOE4

5. What does the CCR5 Δ 32 mutation prevent the function of on human immune cells?

- A) Antibody production
- B) Receptors that HIV binds to**
- C) Red blood cell formation
- D) Cell division

6. What type of immune cells does HIV commonly bind to?

- A) B cells
- B) Macrophages
- C) T cells**
- D) Natural Killer cells

7. What was the gold standard treatment for HIV mentioned in the text before this new development?

- A) Surgery
- B) Antiretroviral therapy (ART)**
- C) Plasma exchange
- D) Immunoglobulin therapy

8. What is a limitation of ART drugs in treating HIV?

- A) They cause rapid organ failure
- B) They eliminate the virus entirely
- C) They do not eliminate the virus entirely and it can remain dormant**
- D) They are only effective in children

9. After the transplant, where did researchers search for reservoirs of HIV?

- A) Hair follicles and nails
- B) Blood, gut tissues, and bone marrow**
- C) Saliva and tears
- D) Nerve endings

10. What did researchers find regarding detectable HIV in the patient's tissues after the transplant?

- A) High levels of detectable HIV
- B) No detectable HIV**
- C) Intermittent detectable HIV
- D) Only detectable in cerebrospinal fluid

11. According to Marius Trøseid, what is key for a cure in HIV treatment?

- A) Peripheral blood engraftment
- B) Bone marrow engraftment
- C) Gut mucosal tissue engraftment**
- D) Lymph node regeneration

12. Why is this bone marrow transplant treatment not yet available for most people with HIV?

- A) It is too expensive
- B) It is too risky compared to ART**
- C) The technology is still experimental
- D) It requires a specific climate to be effective

13. For whom is this bone marrow transplant treatment currently considered primarily?

- A) Patients with mild HIV
- B) Patients with other malignancies or medical conditions requiring a transplant**
- C) Patients who have stopped ART
- D) Asymptomatic HIV carriers

14. What is a significant risk associated with bone marrow transplants for recipients?

- A) Improved immune function
- B) Graft versus host disease (GVHD)**
- C) Weight gain
- D) Increased energy levels

15. What does GVHD mean in the context of a bone marrow transplant?

- A) The donor cells are rejected by the patient's body
- B) The patient's cells attack the donor cells
- C) The donor cells attack the patient's body**
- D) The patient's immune system is completely suppressed

16. What did scientists observe regarding HIV remission even when the donor does not have two copies of the CCR5^{Δ32} mutation?

- A) HIV remission did not occur
- B) HIV remission was less likely
- C) HIV infection went into remission**
- D) The virus became more aggressive

17. What can happen if donor cells are too different from the recipient's cells in a transplant?

- A) Increased risk of graft rejection
- B) Reduced risk of GVHD
- C) Transplant complications such as GVHD could be more of a concern**
- D) The transplant is more likely to be successful

18. What is a potential risk if donor cells are too similar to the recipient's cells?

- A) The treatment could fail to effectively destroy infected T cells**
- B) The recipient's immune system will be overactive
- C) The donor cells will not engraft
- D) Severe allergic reactions

19. What type of virus is HIV-1?

- A) A bacterium
- B) A fungus
- C) A retrovirus**
- D) A parasite

20. What is the primary function of ART drugs for individuals with HIV?

- A) To completely eradicate the virus from the body
- B) To prevent HIV from reproducing and spreading**
- C) To boost the immune system to fight off opportunistic infections
- D) To repair damaged T cells