HIV-1 Remission Through Stem Cell Transplant

Medicine · Answer Key · 19 Questions

1. What is the primary method used in this study to achieve long-term HIV-1 remission?

A) Antiretroviral therapy alone
B) Allogeneic hematopoietic stem cell transplantation (HSCT)
C) Gene therapy targeting HIV DNA
D) Immunization with an HIV vaccine

2. What specific genetic mutation in the stem cell donor conferred resistance to CCR5-tropic HIV-1?

A) CCR5wt/wt
B) CCR5?32/wt
C) CCR5?32/?32
D) CXCR4 mutation

3. What was the age of the patient when he achieved off-treatment HIV remission, 5 years after HSCT?

A) 44 years old
B) 58 years old
C) 60 years old
D) 63 years old

4. What hematological condition was the patient treated for with HSCT?

A) Leukemia
B) Lymphoma
C) Myelodysplastic syndrome
D) Aplastic anemia

5. How long after HSCT was antiretroviral therapy (ART) discontinued in this patient?

A) 6 months
B) 12 months
C) 24 months
D) 48 months

6. What was detected in the patient's blood or gut biopsies 48 months after HSCT?

A) Intact HIV DNA
B) Replication-competent virus
C) No intact HIV DNA
D) Active HIV replication

7. Which anatomical site is identified as the primary viral reservoir for HIV?

A) Peripheral blood
B) Bone marrow
C) Gut
D) Lymph nodes

8. What does 'full donor chimerism' mean in the context of HSCT?

A) A partial replacement of recipient cells with donor cells
B) Complete replacement of recipient cells with donor cells
C) The recipient's immune system rejecting the donor cells
D) The donor's immune system attacking the recipient's cells

9. What was the outcome of the quantitative viral outgrowth assay (qVOA) performed on the patient's CD4+ T cells 48 months post-HSCT?

A) Replication-competent viruses were detected
B) No replication-competent viruses were detected
C) Traces of viral DNA were found
D) The assay was inconclusive

10. What was observed regarding HIV-specific T cell responses in the patient after HSCT?

A) Strong HIV-specific T cell responses
B) Normal HIV-specific T cell responses
C) Absent HIV-specific T cell responses
D) Variable HIV-specific T cell responses

11. What trend was observed in the patient's HIV antibody responses over time post-HSCT?

A) Increasing antibody responses
B) Stable antibody responses
C) Waning antibody responses
D) No antibody responses detected

12. Which of the following was NOT a complication experienced by the patient post-HSCT?

A) Acute graft-versus-host disease (GvHD)
B) Cytomegalovirus (CMV) reactivation
C) Viral rebound of HIV
D) Delayed B-cell reconstitution

13. What drug was used to treat the patient's acute GvHD and has also been discussed as potentially blocking HIV replication?

A) Lenalidomide
B) Vedolizumab
C) Ruxolitinib
D) Ganciclovir

14. What is a significant finding regarding donor chimerism in the gut-associated lymphoid tissues (GALT) of this patient?

A) No donor chimerism was detected in GALT
B) Partial donor chimerism was detected in GALT
C) Full donor chimerism was achieved in GALT
D) Donor chimerism in GALT was not analyzed

15. The study mentions that the CCR5?32 gene variant occurs most frequently in which region?

A) Sub-Saharan Africa
B) East Asia
C) Northern Europe
D) South America

16. What is a major limitation of allogeneic HSCT as a scalable strategy for HIV cure?

A) High cost of the procedure
B) Limited availability of suitable donors
C) Significant procedure-related mortality
D) Potential for drug resistance

17. The study found that intact proviral HIV DNA was undetectable in the patient's peripheral blood CD4+ T cells 48 months post-HSCT. What was detected?

A) No HIV DNA at all
B) Traces of total HIV DNA
C) Active HIV replication
D) High levels of intact proviral DNA

18. What assay was used to assess intact proviral HIV DNA?

A) PCR
B) Western blot
C) ddPCR (cross-subtype intact proviral DNA assay)
D) ELISpot

19. Which of the following HIV proteins were targeted in the western blot analysis for antibody responses?

A) Nef, Gag, and Pol

B) Env, Gag, and Pol

C) Tat, Rev, and Vpu

D) Vif, Vpr, and Nef