



IMMUNE PHENOMENA

ANTIRETROVIRAL THERAPY EFFECTS IN

CHILDREN WITH HIV INFECTION

CLINICAL CASE

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Question



A baby is born to an HIV-infected woman and has PCR DNA (+).

When to start ART:

1. After the appearance of clinical manifestations;



2. If CD 4+ < 25 %;

3. Immediately after tests that confirm HIV infection (rapid test; ELISA; PCR DNA or PCR RNA)





Clinical Case



- **An HIV-infected child in the first year of life has a particularly high risk of HIV progression. Therefore, it is recommended to start antiretroviral therapy for a child immediately after receiving the results of tests confirming the presence of HIV infection (rapid test; ELISA; PCR DNA or PCR RNA).**
- **Early initiation of treatment prevents the spread of the virus in the body of the child, ALLOWS YOU TO INHIBIT THE VIRUS REPLICATION for a long time and preserves the function of the thymus.**
- **As a result, the child retains the immune system functionality and the clinical condition is stabilized. There are no abnormalities in physical and mental development.**





Clinical Case



Child – Kateryna P.

DoB: 06.11.200p.

- **History of the disease: a child from the second pregnancy, the first urgent birth (body weight at birth 3,250 g., body length - 50 cm.)**
- **The mother and child HIV status was established during childbirth with a rapid test. The child, according to the clinical protocol, had an umbilical cord blood sample taken in the delivery room to detect antibodies to HIV by ELISA.**
- **November 6, 2008 - antibodies to HIV were detected. Prevention of vertical transmission with three drugs according to the current protocol (AZT + 3TC + NVP) - 28 days.**
- **Diagnosis: R-75.**
- **At the age of 1 month PCR DNA test result is positive**
- **At 2 months PCR DNA test result is positive**
- **At 3 months ARV therapy was started**





Dynamics of serum test indicators in a child born to an HIV-infected mother

Test name	1 blood (24 months)	2 blood (25 months)	3 blood (31 months)
Primary screening	HIV antibodies not detected	HIV antibodies not detected	HIV antibodies not detected
Genscreen Ultra HIV Ag-Ab	HIV antibodies not detected	HIV antibodies not detected	HIV antibodies not detected
HIV-ELA	HIV antibodies not detected	HIV antibodies not detected	HIV antibodies not detected
Genscrev HIV1\2 V.2	HIV antibodies not detected	-	-
NEV LAV BLOT	-	Antibodies to the following proteins detected : p68;p55;p51p25	Antibodies to the following proteins detected : p68;p55;p51p25





Question



The presence of which proteins indicates that the results of Western blot are evaluated as positive?

1. The serum contains antibodies to two proteins of the env gene in combination with other proteins (gag and pol genes) or without them.
2. The serum contains antibodies to only one protein of the env gene in combination with other proteins.
3. Antibodies are not detected





Clinical Case



Western blot test results are evaluated in accordance with the WHO recommendations:

- negative – antibodies are not detected
- positive - the blood serum contains antibodies to the proteins of env gene in combination with other proteins (of gag and pol genes) or without them.
- dubious or uncertain – the blood serum contains antibodies to only one protein of env gene in combination with other proteins.

In the above case the blood serum (plasma) contained antibodies to the following proteins:

- **virus enzymes (pol gene) – p68.**
- **glycoproteins of the virus core (gag gene)- p55;p51;p25;**

But no viral envelope glycoproteins (env gene)

In accordance with the WHO recommendations the Western blot test results are evaluated as negative – **antibodies are not detected.**





Question



Has the child recovered?

- 1. Yes.**
- 2. No.**



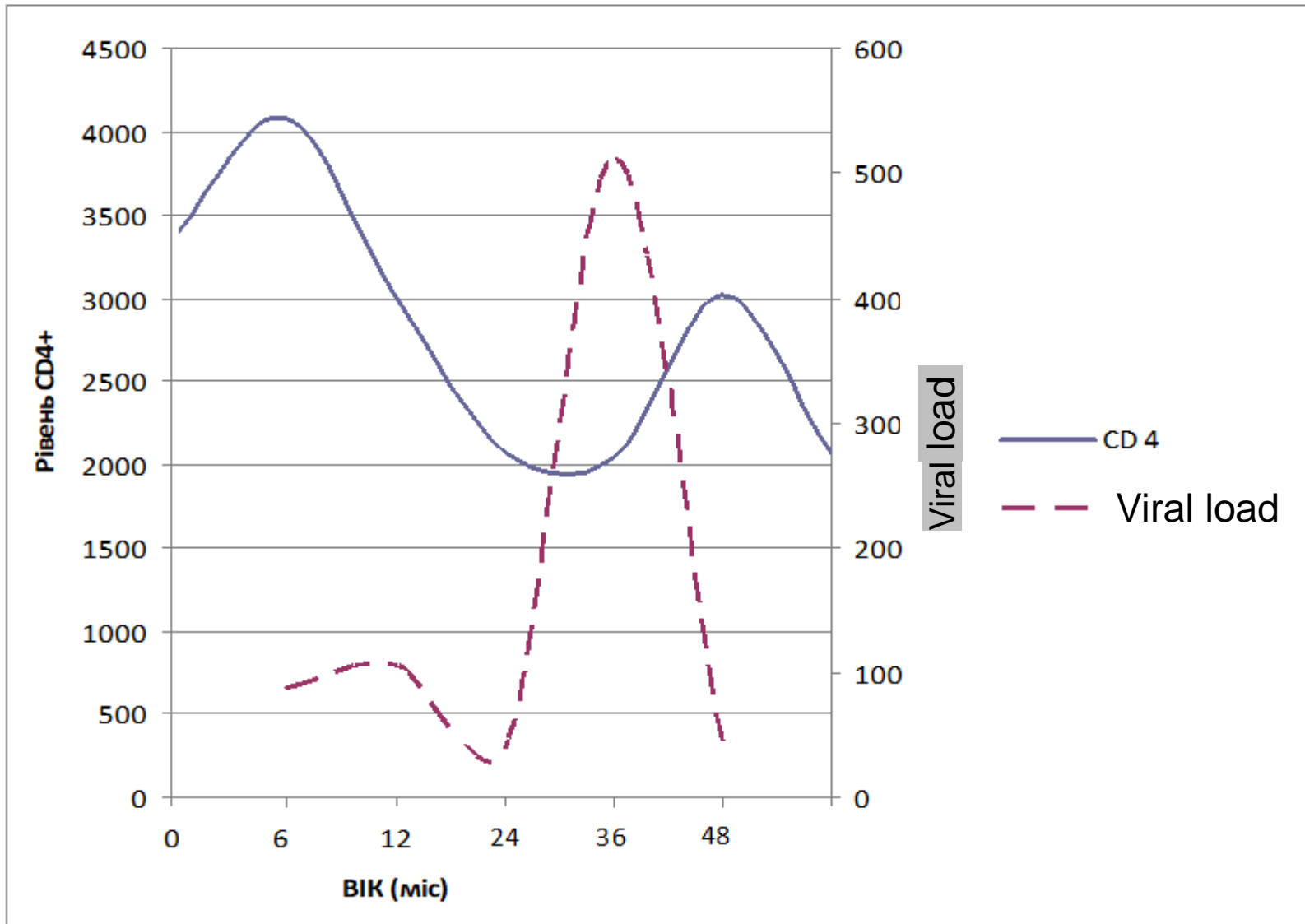
Under which conditions will the virus replication resume?

- 1. In case of CD4+ reduction to $>25\%$;**
- 2. In case of ART discontinuation.**
- 3. If the viral load is > 100 RNA/copies/mL for a long time/**
- 4. All answers are correct.**





Viral load and CD4 count over time depending on the age of a child





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Results of the child's blood serum tests in 2020

Primary screening (architect)	17.08.2020 - HIV antibodies detected
Best Ultra HIV Ag-Ab	17.08.2020 - HIV antibodies detected
Recombinant HIV	19.08.2020 - HIV antibodies detected
NEV LAV BLOT	Antibodies to the following HIV-1 proteins detected: g120 g41 p31 p24 p17





Conclusions

- Early initiation of HAART leads to sustained suppression of virus replication and normalization of the immune response to antigens (non-HIV antigens).
- Against the background of antiretroviral therapy, antibodies to HIV are not detected and the HIV-specific response disappears, but this does not mean that there is a complete recovery from HIV.
- HIV-1 proviral DNA continues to be found in peripheral blood lymphocytes. However, if therapy is discontinued, virus replication will resume.





Thank you!