



### Case Report

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## Measles in an HIV infected pregnant woman in Ukraine: A case report

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### Abstract

**Background:** Ukraine had the highest population affected by measles in the world in 2018. This disease is especially dangerous for people with a severe immunodeficiency, including HIV-positive patients. **Aim:** The aim of this study was to analyse the case of a pregnant, HIV-positive woman who was also affected by measles at the time of pregnancy. **Case Report:** Here we present the case of a woman, who is 20 years old and had a second pregnancy at that time. She caught measles during first trimester of pregnancy. However, it is important to indicate that the patient was HIV-positive, also identified as Z21, which is decoded as a primary, asymptomatic stage of HIV, also sexually transmitted. The specialists concluded that according to an ultrasound scanning and marker assessment (13-17 weeks pregnant) no abnormalities were identified. To our understanding, the factors that promoted successful development and outcome of this pregnancy are as follows: the age of the patient (20 y.o.), absence of any extragenital pathologies, primary stage of HIV, absence of reduction in CD4 count and efficient antiretroviral therapy. **Conclusion:** This case demonstrates that a combination of such pathologies as measles and HIV during pregnancy does not always negatively affect a newborn.

**Keywords:** HIV infecton; Measles; Pregnant woman.

### INTRODUCTION

According to UNICEF and WHO (World Health Organisation), Ukraine had the highest population affected by measles in the world in 2018 [1]. There were 35,120 cases officially registered in 2018, which is more than the number of affected individuals in the Philippines (15,599 cases) and Brazil (10,262 cases) combined [1].

Measles is connected to a number of pathologies during a period of pregnancy, such as high miscarriage rates, high rates of stillborn babies and preterm parturition [2]. Moreover, an infection that develops before going to parturition may lead to neonatal measles [3]. However, it is important to point out that measles is thought not to increase the frequency of congenital malformations. Vaccination during pregnancy is forbidden due to the associated risks connected with the virus cultures inside the vaccines; no correlation between vaccination and negative outcomes during pregnancies.

American College of Obstetricians and Gynecologists (ACOG) concluded that patients affected by measles while pregnant lead to an increase in rate of miscarriages [2]. Furthermore, measles was found to negatively affect the immune system of the affected patients. As a result, this disease is especially dangerous for people with a severe immunodeficiency, including HIV-positive patients [4-5].

### Aim

The aim of this study was to analyse the case of a pregnant, HIV-positive woman who was also affected by measles at the time of pregnancy. We will describe the stages of pregnancy, parturition and postpartum period of this patient as well as which treatment options were implied and what observations were made.

### Study Design

In terms of methodology, several means of examination were carried out in order to better understand the patient's well-being and to make a comprehensive analysis of the disease state. Such measures as general and biochemical blood tests, urine test and hepatitis B and C tests were carried out. Moreover, the patient's

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blood samples were examined for the presence of TORCH infections, PAPP molecules (biochemical marker of genetically determined developmental abnormalities) and presence of chorionic gonadotropin at 13 weeks pregnant, and free Estriol (E3) at 17 weeks pregnant. In addition, immunofermentive analysis was implied to test the samples; the tests also included assessment of the CD4 count (or T-cell test), and the viral load tests (to assess levels of HIV genetic material). Furthermore, we used ultrasonography and cardiotocography (CTG) in order to assess the well-being of the foetus, its heartbeat and the uterine contractions [6].

#### CASE REPORT

Here we present the case of a woman, who is 20 year old and had a second pregnancy at that time. She caught measles during first trimester of pregnancy. However, it is important to indicate that the patient was HIV-positive, diagnosed during first pregnancy on December 15, 2014 when she was 16 year old, also identified as Z21, which is decoded as a primary, asymptomatic stage of HIV, also sexually transmitted (5). The patient was diagnosed using immunofermentive analysis, based on the guidelines of the Ministry of Health of Ukraine. Patient's husband was identified as HIV-negative (discordant couple). CD4 count assessed on December 9, 2014 was 478 cells/ $\mu$ l (24.7%), viral load 6438 copies of RNA/ml. On December 9, 2014 the patient was prescribed an antiretroviral therapy, which involved the following drugs: zidovudine (AZT), lamivudine (3TC), lopinavir (LPV), ritonavir (RTV). Adherence to therapy was high, with the viral load measured at 20 copies of RNA/ml before parturition. First parturition took place as a vaginal childbirth on April 2, 2015. The child was a boy, weighed 3,700 grams, and its height was measured at 53 cm. He was assessed for HIV twice using PCR; he was diagnosed as HIV-negative. At 1.5 year old, the boy was removed from the register because of absence of HIV-related antibodies. During postpartum period the patient carried on with her antiretroviral therapy. Since 2018 her therapy was modified and some drugs were replaced; the current version is as follows: tenofovir (TDF), emtricitabine (FTC), lopinavir (LPV), ritonavir (RTV). The use of more modern drugs was made to optimize the treatment and maintain viral suppression of the HIV virus.

While taking this course of medication, the patient got pregnant again, however she got affected by measles and was admitted to the hospital. After she has recovered from measles, she was observed and examined by the specialists from Lviv Medical Genetics Center; the specialists concluded that according to an ultrasound scanning and marker assessment (13-17 weeks pregnant) no abnormalities were identified. Furthermore, before parturition, the patient remained under direct observation of an assigned doctor (obstetrician-gynecologist) of the women's health clinic, HIV specialists from Lviv Communal Municipal Clinical Hospital and specialists from Lviv Medical Genetics Center. The latest CD4 count taken on 16<sup>th</sup> of January 2019, before parturition was 889 cells/ $\mu$ l (42.4%) while viral count was less than 20 copies of RNA/ml. On February 15, 2019 a patient had a normal vaginal birth; a girl was born, weighing 3,200 g and with a measured height of 51 cm. The samples collected from a newborn were analysed by PCR, which confirmed her as HIV-negative on March 15, 2019. Currently, she is maintained using artificial feeding and has a normal development.

#### DISCUSSION

To our understanding, the factors that promoted successful development and outcome of this pregnancy are as follows: the age of the patient (20 year old), absence of any extragenital pathologies, primary stage of HIV, absence of reduction in CD4 count and efficient antiretroviral therapy (viral count before parturition <20 copies of RNA/ml). But it should be noted that, according to(4) lower levels of measles antibody in HIV-exposed newborns and in younger women < 25 years old, increases the susceptibility of their newborns to developing

measles [4]. So, this is an issue that requires a profound study and understanding.

#### CONCLUSION

This case demonstrates that a combination of such pathologies as measles and HIV during pregnancy does not always negatively affect a newborn. However, in order to build up strong and generalisable conclusions about such a combination and its effects, there is a need for an investigation of a larger number of cases from different age groups and potentially ethnic groups too.

#### Conflict of Interests

The authors declare that they have no competing interests.

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