МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
СУМСЬКИЙ ДЕРЖАВНИЙ УНІВЕРСИТЕТ
КАФЕДРА ІНФЕКЦІЙНИХ ХВОРОБ З ЕПІДЕМІОЛОГІЄЮ
ГО «АСОЦІАЦІЯ ІНФЕКЦІОНІСТІВ СУМЩИНИ»

Інфекційні хвороби в практиці лікаря-інтерніста: сучасні аспекти

Infectious diseases in practice of physician-internist: modern aspects

Матеріали Всеукраїнської науково-практичної конференції, присвяченої 20-річчю кафедри інфекційних хвороб з епідеміологією СумДУ
(Суми, 25–26 травня 2017 року)

Суми
Сумський державний університет
2017

Vozna Khrystyna I. Boyko Julia I.

PROLONGATION OF THE QTc INTERVAL IN PATIENTS WITH HIV INFECTION

Department of Internal Medicine and Infectious Diseases
Supervisor: MD, professor V.D. Moskaliuk
Higher Educational Institution "Bukovyna State Medical University", Chernovtsy, Ukraine

Возна Христина Ігорівна, Бойко Юлія Ігорівна

ПРОЛОНГАЦІЯ QTc ІНТЕРВАЛУ У ПАЦІЄНТІВ З ВІЛ-ІНФЕКЦІЄЮ

Кафедра внутрішньої медицини та інфекційних хвороб
Науковий керівник: д-р мед. наук, професор В. Д. Москалюк
ВДНЗ України «Буковинський державний медичний університет», м. Чернівці, Україна
infection@bsmu.edu.ua

Резюме. *Серцево-судинні ураження у ВІЛ-інфікованих хворих стають все більш домінуючими причинами захворюваності та смертності. Зважаючи на те, що ВІЛ-інфіковані пацієнти мають значний ризик розвитку пролонгації QT, вимірювання цього електрокардіографічного інтервалу має велике клінічне значення, головним чином, тому, що його подовження може асоціюватися з підвищеним ризиком раптової серцевої смерті*.

Adjective. HIV-infected patients are at increased risk of cardiovascular disease. To verify the affections of the cardiovascular system in HIV-infected patients at an early stage it is important to find simple prognostic markers, such as the study of bioelectrical activity of the heart. ECG is a useful tool in screening patients for HIV as electrocardiographic changes may precede echocardiography violation. Particular attention should be paid to the analysis of ventricular complex, namely the length of the electrical ventricular systole. HIV-infected patients with significant risk of QT prolongation drug for several reasons. First, these patients are

prescribed drugs (ARVs, antibiotics, antifungals, psychotropic, antihistamines, etc.) against most infections and therefore the prevalence of pharmacokinetic/pharmacodynamic drug interactions is associated with prolongation of QTs is high. Secondly, some antiretroviral drugs are directly associated with this disorder.

The goal is to increase the effectiveness of early diagnosis of cardiovascular complications in HIV-infected patients.

Subjects and methods. Under our supervision there were 136 patients with HIV infection. Among the surveyed HIV-infected patients there were 44 patients with clinical stage I, 48 with clinical stage II, 23 patients with clinical stage III and 21 with clinical stage IV. All surveyed persons with III-IV clinical stages of HIV infection were receiving first-line highly active antiretroviral therapy (HAART) schemes as recommended in Ukraine, 26 people (59.1%) were following the schemes, which are based on NNIRT, and 18 (40.9%) - on the strong IP. 32 HIV-positive people were on HAART for 3 months to 1 year, the remaining 12 patients for more than a year. Three-channel electrocardiograph SCHILLER AT-1 (Switzerland) was performed in all HIV-infected patients. The analysis was performed by conventional methods. QT interval measured from the beginning of the complex QRS (Q wave or R) by the end of wave T. Then the QT interval was corrected for heart rate using Bazetta formula: $QTc = QT/\sqrt{RR}$. QTc interval was extended for the duration of more than 0.44 sec. Comparison group consisted of 30 healthy persons with same sex and age as of HIV-infected patients. For human rights all diagnostic and therapeutic procedures were performed with informed written consent from the patients.

Results of research. Extension of electrical ventricular systole recorded among (27,2±3,8) % of HIV-infected patients in (20,5±6,1) % of patients presented with I clinical stage of HIV infection, (22,9±6,1) % of people with II clinical stage, (34,8±9,9) % and (47,6±10,9) % of HIV-positive patients with III and IV clinical stages of the disease respectively. It is important that (47,1±4,3) % of the patients take the drugs with high and moderate risk of QTc

interval prolongation. It was found that the risk of abnormal QTc interval is higher among HIV-infected women ($p<0,05$), it grew up in patients with more immunodeficiency ($p<0,05$) and duration (over 5 years) of HIV infection ($p<0,01$). The increase in the electrical ventricular systole is often recorded in HIV-infected patients with right bundle branch block and in patients with ischemic changes in myocardium ($p<0,05$). Patients with prolongation of QTc interval when compared to the patients with normal duration of this interval had a significantly higher incidence of co-infection with hepatitis C virus ($p<0,05$).

Our results showed that patients who are on antiretroviral therapy based on enhanced protease inhibitor have significantly more abnormalities of recorded QTc interval. But you need to keep in mind that those with HIV have significant high immunodeficiency ($CD4^+$-lymphocytes level of <349 cells/mm^3) and against a background of prolonged HIV infection they take antibacterial, antifungal drugs (associated with the risk of electrical extension ventricular systole) to treat opportunistic infections. In addition, most patients who are on HAART get it for less than a year. By the establishment of direct correlation between the HIV-infected patients on HAART for enhanced IP and frequency of extension of electrical ventricular systole ($r=0,22$). We can not say that taking antiretroviral drugs (particularly protease inhibitors) have a significant affect on the QTc interval prolongation.

Conclusions. For reliable and timely verification of lesions of the cardiovascular system in HIV-infected patients it is needed to find a simple prognostic markers, such as the study of bioelectrical activity of the heart. In the analysis of ventricular complex special attention should be paid to the duration of the electrical ventricular systole, as QT prolongation is predictive of serious cardiac arrhythmias that can cause sudden cardiac death.