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Predictors of Fatal Outcome in Newly Diagnosed Tuberculosis/HIV Co-Infection with Chronic Alcoholism (Clinical Case)

Our own case of tuberculosis/HIV co-infection's diagnosis in chronic alcoholism and analysis of the fatal outcome predictors are presented. The patient abused alcohol for a long time in the presented case, he was hospitalised with acute psychosis in a psychoneurological dispensary, where pulmonary tuberculosis and HIV infection were diagnosed for the first time during additional examination. The patient was admitted to the department in serious condition after prolonged alcohol intoxication. The patient's condition stabilized after detoxification therapy. Antimycobacterial therapy according to the scheme of an individual treatment regimen, antiretroviral therapy, treatment of hepatitis B and C, detoxification therapy, prophylaxis with Biseptol and Fluconazole and symptomatic therapy were prescribed. After 20 days immune reconstitution inflammatory syndrome developed. It was manifested with meningitis and cryptococci were detected in the cerebrospinal fluid 17 days later. Prescribed treatment of cryptococcal meningoencephalitis with fluconazole in high doses intravenously had a significant positive effect, which made it possible to reduce the dose of the drug to the maintenance level. The treatment was not stopped, but sterility of the liquor was not achieved. After 98 days the patient entered a coma and after 113 days he died from the progression of multiple organ failure and cryptococcal meningitis. It should be noted that the patient was diagnosed with tuberculosis with multiple drug resistance for the first time, the treatment of which had positive dynamics, despite the progression of multiple organ failure and the presence of cryptococcal meningoencephalitis. Therefore, although tuberculosis was not the direct cause of the patient's death, the disease itself deepened the severity of the general condition. Considering the presented clinical case, it was established that predictors of the fatal outcome of newly diagnosed tuberculosis/HIV co-infection in chronic alcoholism are: antisocial lifestyle; concomitant diseases (tuberculosis, chronic viral hepatitis B and C); cryptococcal meningoencephalitis; fever, altered mental status, cryptococci in the cerebrospinal fluid; the number of $CD4^+$ lymphocytes is less than 200/μL; lack of early screening for CrAg; early initiation of antiretroviral therapy before the diagnosis of cryptococcal meningoencephalitis, which provokes immune reconstitution inflammatory syndrome, against the background of which cryptococcal infection progresses; monotherapy of cryptococcal meningoencephalitis with Fluconazole. Knowledge and practice gaps among medical practitioners contribute to the high fatality rate of cryptococcal meningoencephalitis in tuberculosis/HIV co-infection in chronic alcoholism.

Keywords

Mortality, tuberculosis, HIV, chronic alcoholism.

The widespread issue of chronic alcoholism is well-known globally. It often results in patients neglecting their health, lacking adherence to treatment regimens and experiencing the progression of diseases to advanced stages, ultimately leading to fatal outcomes. Studies have extensively demonstrated alcohol's systemic impact on various organs, particularly the liver [13, 17, 33, 35].

Today all over the world both HIV infection and tuberculosis (especially chemoresistant) are the

main causes of morbidity and mortality [1]. At the same time, the incidence of tuberculosis among HIV-positive persons is higher than in the general population.

HIV infection and alcohol independently affect the human immune system and in combination, their influence increases [7]. Chronic alcoholism leads to an increase in the level of the virus in the blood plasma and changes in the population of immune cells that increase HIV replication, which contributes to the rapid progression of the disease to the terminal stage [6, 10, 21, 23, 30]. Alcoholism in HIV-infected persons is the main risk factor for the development of neuropathology and its functional consequences [22, 29]. In addition, alcohol affects the transmission, progression and prevention of HIV/AIDS, adherence and results of antiretroviral therapy (ART), etc. [22].

Alcohol abuse is associated with an increased risk of liver fibrosis in HIV-infected patients. A high prevalence of combined infection with viral hepatitis (VH)-B and VH-C among HIV-positive persons is determined, which is a serious public health problem worldwide and increases the mortality rate [1, 15]. Co-infection HIV/VH-C and alcohol abuse has a higher risk of developing liver fibrosis than in patients with only HIV infection [13, 17]. Such a combined course has a significantly higher mortality rate compared to patients who do not drink alcohol [36].

A.N. Tekelehaimanot et al. [34] found that predictors of death among people living with HIV are: poor nutritional status, late stage of HIV infection, unsuccessful treatment, female gender, substance abuse, lack of social support, immunological deficiency, young age, low level of education and poor access to health care.

HIV increases susceptibility to primary infection or relapse of tuberculosis (TB) [18], while timely use of antimycobacterial therapy (AMBT) and adherence to ART reduce the risk of active TB infection.

Ahmed A. et al. [3] found that important factors of tuberculosis incidence among patients with HIV/AIDS are: tuberculosis in anamnesis, absence of AMBT, low body mass index and hemoglobin level, late clinical stage of HIV infection and lying down.

Alcohol consumption is also associated with an increased risk of developing tuberculosis. Alcohol abuse significantly increases the risk of ineffective and interrupted treatment both in patients with drug-susceptible tuberculosis and with tuberculosis with multiple drug resistance (MDR-TB) [25, 26].

Z. Dawit et al. [11] highlighted the following significant predictors of mortality among patients with TB/HIV co-infection: extrapulmonary tuberculosis, anemia, non-compliance with the treatment regimen and the use of prophylactic isoniazid therapy. Therefore, it is very important to carefully monitor extrapulmonary tuberculosis and anemia to increase adherence to treatment and to conduct timely prophylactic isoniazid therapy in this contingent. To reduce the risk of tuberculosis among HIV-positive people, A. Alemu et al. [4, 5] also recommend considering the possibility of early HIV diagnosis, initiation of ART and prophylactic treatment with isoniazid.

Thus, HIV infection and tuberculosis separately are serious diseases and have a high risk of mortality and their combined course against the background of alcohol abuse significantly increases the mortality rate. At the same time, alcohol abuse leads to a decrease in the effectiveness of the treatment of both diseases. The literature describes various variants of mortality predictors of both HIV infection and tuberculosis separately, as well as tuberculosis/HIV co-infection. But we did not find data about predictors of mortality in TB/HIV co-infection with chronic alcoholism, which would allow to develop preventive measures to reduce this rate.

Therefore, objective of the work was to find fatal outcome predictors of the newly diagnosed tuberculosis/HIV co-infection in chronic alcoholism in a patient who was being treated at the Zaporizhzhia Regional Phthisiopulmonology Clinical Treatment and Diagnostic Center based on the example of our own case.

Clinical case

Patient E, 40 years old, had no previous history of tuberculosis. The patient had a long-standing history of alcohol abuse. He was admitted to a psychoneurological dispensary with acute psychosis, where further examination revealed the diagnosis of pulmonary tuberculosis and HIV infection for the first time.

On May 5, 2023, a rapid HIV test yielded positive results, while a blood test for $CD4^+$ lymphocytes showed a count of 182/μL (9.8 %) and a viral load of 3,140,000 RNA copies/mL. Urine analysis using LF-LAM (immunochromatographic lipoarabinomannan test) returned a positive result. *Mycobacterium tuberculosis* (MBT) was detected in the sputum through molecular genetic testing (MG), indicating MBT+, MG+ status, with resistance to rifampicin (Rif)+, with negative results observed on sputum microscopy (M).

Afterwards, on May 9, 2023, the patient was admitted to the Zaporizhzhia Regional Phthisiopulmonology Clinical Treatment and Diagnostic Center with a diagnosis of pulmonary tuberculosis and HIV infection. The patient arrived at the department in a serious condition following prolonged alcohol intoxication. Upon admission, the

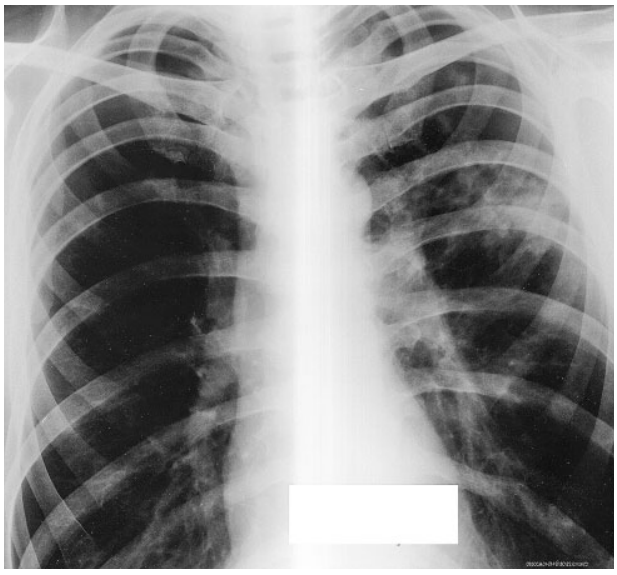

Fig. 1. **Chest X-ray at the time of patient hospitalisation**

There are focal infiltration with decay up to 1.5 cm in diameter with a path to the root in the upper lobe of the left lung. Few foci of contamination in the upper part of the right lung are determined. The roots are structural. Domes of the diaphragm are even, clear. The sinuses are free. A heart without features.

patient underwent a chest X-ray, which revealed notable changes (Fig. 1).

An infectious disease specialist's conclusion: HIV infection, IV clinical stage.

The diagnosis was established: Rifampicin-resistant tuberculosis (RifTB) (09.05.2023) infiltrative of the upper lobe of the left lung with contamination, destruction+, MBT+, MG+, Rif+, M–, LF-LAM(+). Histology 0 (new case of tuberculosis — NTB). HIV infection, IV clinical stage.

The next day, MBT was detected microscopically in the sputum (M), the genotypic drug sensitivity test (gDST) revealed resistance to isoniazid (H), and when the sputum was ready, the result was — «germination» of culture. Positive blood test results for HCV and B were obtained: rapid test for HCV, HBsAg. An infectious disease specialist conclusion: chronic VH-B+C.

Based on the updated information, the patient's diagnosis was revised: HIV infection, IV clinical stage. MDR-TB (10.05.2023) infiltrative of the upper lobe of the left lung with contamination, destruction+, MBT+, MG+, Rif+, gDST(H), M+, K–, LF-LAM(+). Histology 0 (NTB). Chronic VH-B+C. Toxic alcoholic encephalopathy, polyneuropathy.

Complex treatment was prescribed: AMBT according to the scheme of an individual treatment regimen (LfxBdqLzdCfzCs), ART (TDF/3TC/DTG), treatment of hepatitis B and C (SOF/VEL), detoxification therapy, prophylaxis with Biseptol and Fluconazole, symptomatic therapy.

Spirography: Ventilation failure of the 1st degree.

An ultrasound examination of the abdominal organs revealed signs of hepatomegaly, diffuse changes in the liver and pancreas, diffuse changes in the parenchyma of the kidneys (nephropathy), grade I caliectasis of both kidneys.

No pneumocysts were detected in sputum analyses during the entire hospital period. Also, MBT was not detected both microscopically and culturally.

After 20 days (30.05.2023) immune reconstitution inflammatory syndrome (IRIS) developed. It was manifested with meningitis (increase in body temperature to 39 °C, headaches, loss of consciousness).

On June 7, 2023, a lumbar puncture was performed with a cerebrospinal fluid examination: MBT– (MG–, M–), protein — 0.99 g/L, Nonne-Appelt reaction (3+), Pandy's reaction (4+), cytosis — 17 cells/μL, glucose — 1.5 mmol/L, chlorides — 83.4 mmol/L, cryptococci — detected.

According to the results of the cerebrospinal fluid, the infectious disease specialist made the diagnosis: cryptococcal meningoencephalitis. Fluconazole treatment intravenously 1200 — 800 — 400 mg/day, hormones, diuretics, L-lysine aescinat, cerebroprotectors were added to treatment.

Considering the seriousness of the patient's condition, it was only on 21.06.2023 possible to do a magnetic resonance imaging (MRI) of the brain with intravenous contrast enhancement (Fig. 2), which finally confirmed the presence of meningoencephalitis in the patient.

The next day another lumbar puncture was performed with an examination of the cerebrospinal fluid: protein — 0.99 g/L, Nonne-Appelt reaction (3+), Pandy's reaction (2+), cytosis — 9 cells/μL, glucose — 1.46 mmol/L, chlorides — 96.8 mmol/L, MBT—, cryptococci — detected.

After 2 months of tuberculosis treatment, positive changes were observed in the patient's lungs on X-ray examination (Fig. 3).

A month after the diagnosis of cryptococcal meningoencephalitis the following changes were determined in the cerebrospinal fluid: protein — 1.65 g/L, Nonne-Appelt reaction (2+), Pandy's reaction (4+), cytosis — 50 cells/μL, glucose — 0.7 mmol/L, chlorides — 96.8 mmol/L, MBT—, cryptococci — detected.

On August 1, 2023 (after 54 days), the indicators of the cerebrospinal fluid remained unchanged (sterility of the liquor was not achieved despite massive fluconazole therapy in high doses): protein — 1.65 g/L, Nonne-Appelt reaction (3+), Pandy's reaction (4+), cytosis — 54 cells/μL, glucose — 0.72 mmol/L, chlorides — 96.8 mmol/L, MBT–, cryptococci — detected.

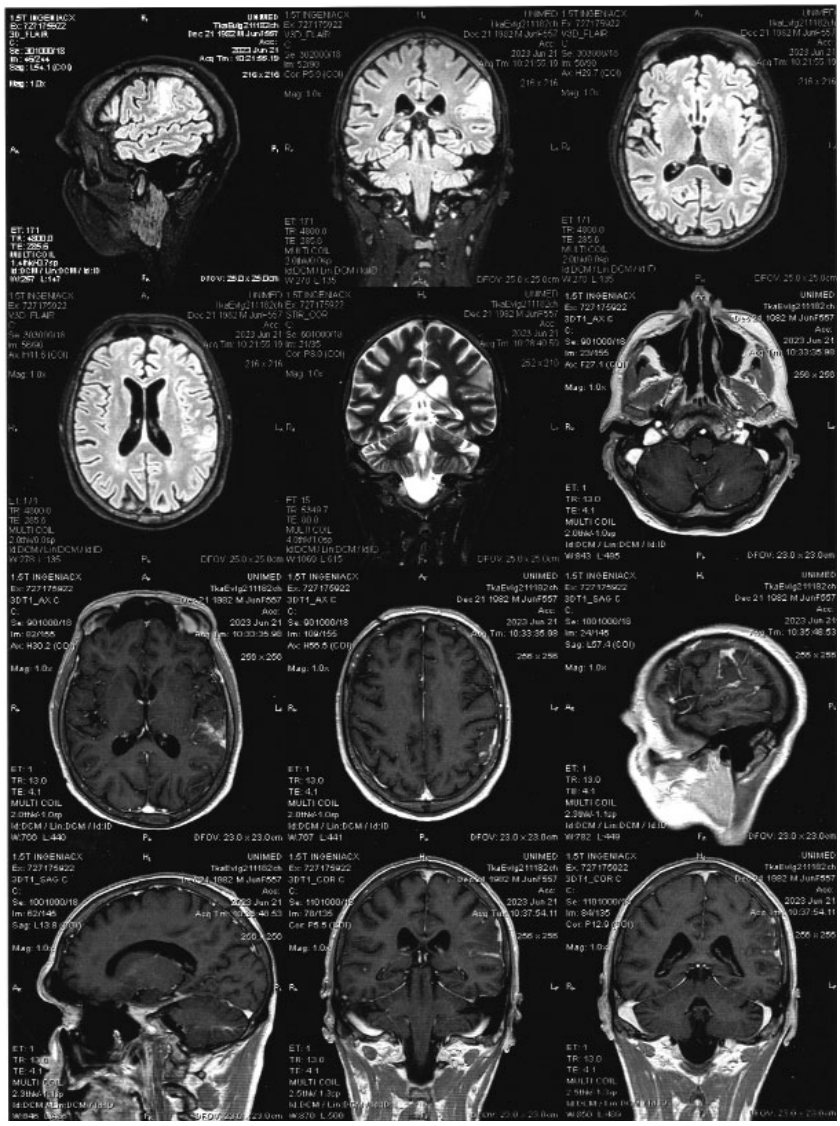

Fig. 2. **MRI of the brain from 21.06.2023**

Images of brain structures were obtained in T1, T2, FLAIR, STIR and DWI modes. An area of the pathological signal in the critical-subcortical lateral parts of the parietal lobe on the left side of size 28 × 31 × 24 mm is determined. Multiple small round and ovoid foci of the pathological signal are determined in the cortical and subcortical parts of the cerebral hemispheres on both sides up to 3—5 mm in diameter without peri-focal edema, the adjacent soft membrane with a minimal pathological signal. There are periventricular zones with a pathological signal. On post-contrast images the accumulation of contrast material is determined in the cortical sections of the pathological area of the left parietal lobe and adjacent membranes, there is also an area of accumulation of contrast by membranes in the anterior temporal regions, in the area of the left hemisphere of the cerebellum. Some foci — without accumulation of contrast.
Conclusion: The changes may be signs of meningoencephalitis with lesion of the cortico-subcortical parts of the left parietal lobe, with multiple inactive cortical and subcortical foci.

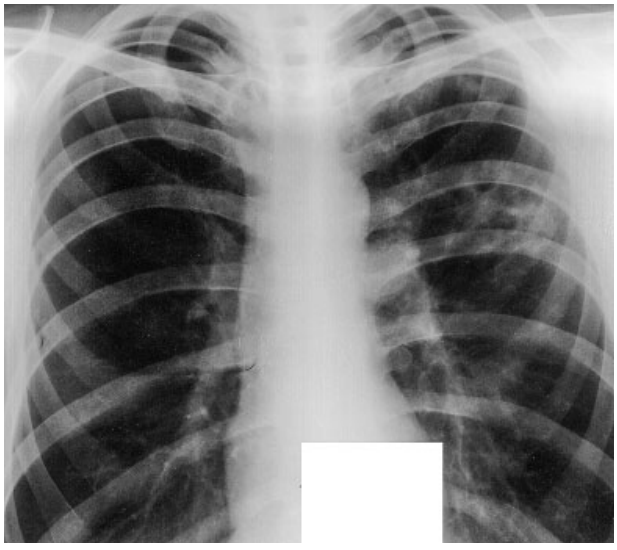

Fig. 3. **Chest X-ray from 07.07.2023 (after 2 months)**

Partial resorption of infiltration, compaction of foci are determined in the upper lobe of the left lung, destruction reduced to 0.5 cm in diameter. Few compacted foci in the upper part of the right lung are identified. The roots are structural. A heart without features.

Such indicators of biochemical blood analysis as liver tests, glucose, potassium, sodium, chlorine during the patient's stay in the hospital were within normal limits. During inpatient treatment, the creatinine level was elevated all the time (within the normal range only on 12.07.2023), the urea level was within the normal range, and the level of residual urea nitrogen was reduced (Fig. 4). The level of creatinine increased in 5.6 times (to 652 mmol/L), and urea increased in 2 times (to 18.2 mmol/L) on the day before death (August 30, 2023).

Regarding indicators of a general blood test during the patient's stay in the hospital a normal erythrocyte sedimentation rate, an increase in anemia and leukocytosis with a band neutrophils shift to the left were determined.

But in the general analysis of urine there were increasing changes that indicated kidneys lesion:

– Before starting the treatment the urine parameters were as follows: specific gravity — 1017, pH — alkaline, protein — 0.033g/L, erythrocytes — 4—6

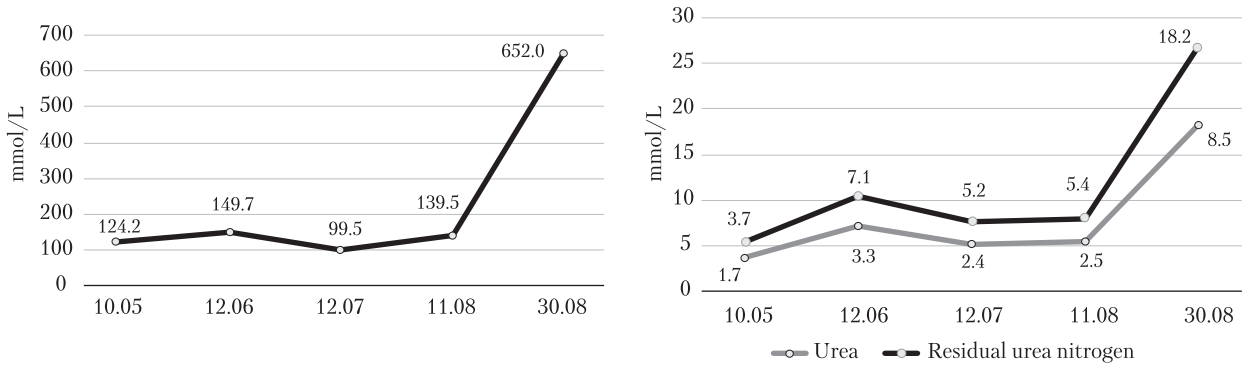

Fig. 4. **Dynamics of biochemical blood analysis indicators: creatinine, urea and residual urea nitrogen**

in the vision field (v/f), leukocytes — 4—6 in the v/f, squamous epithelium — a lot in the v/f, renal epithelium — 2—4 in the v/f, hyaline cylinders — 0—1 in the v/f, granular cylinders — 0—1 in the v/f.

– 3 days before death: specific gravity — 1010, pH — acidic, protein — 0.33g/L, erythrocytes — 4—5 in the v/f, leukocytes — 10—12 in the v/f, squamous epithelium — a lot in the v/f, renal epithelium — 3—4 in the v/f, hyaline cylinders — 2—3 in the v/f, granular cylinders — 2—3 in the v/f, uric acid crystals — a lot in the v/f. The therapist's conclusion: HIV-associated nephropathy.

The patient's electrocardiographic parameters remained stable during his hospitalisation: sufficient voltage, sinus rhythm, heart rate ranging from 73 to 83 beats per minute and no deviation in the heart electrical axis. Diffuse dystrophic changes of the myocardium were noted.

Treatment with high-dose intravenous Fluconazole had a significant positive effect, allowing for a reduction in the drug dosage to maintenance levels. Despite ongoing treatment, cerebrospinal fluid sterility was not achieved, and the patient's overall condition deteriorated. From August 15, 2023, the patient entered a state of sopor, progressing to coma. Biological death was confirmed on August 31, 2023.

The postmortem diagnosis: HIV infection, IV clinical stage. HIV-associated multiple organ failure. Cryptococcal meningoencephalitis. Edema of the brain. HIV-associated nephropathy. MDR-TB (10.05.2023) infiltrative of the upper lobe of the left lung with contamination, destruction+, MBT+, MG+, Rif+, gDST(H), M+, K–, LF-LAM(+). Histology 0 (NTB). Chronic VH-B+C. Anemia of a chronic patient. Toxic alcoholic encephalopathy, polyneuropathy.

Morphological diagnosis: The disease caused by HIV, complicated by acute secondary cryptococcal meningoencephalitis. Infiltrative tuberculosis of the upper lobe of the left lung. Chronic hepatitis C. Chronic hepatitis B. Generalized edema-swelling of the brain substance with dislocation and wedging of the brain stem and cerebellar tonsils in the occipital-dural fossa. Secondary stem syndrome (complete and incomplete neuronal necrosis and diapedesis hemorrhages in the brain stem). Anemia. Kidney failure. Parenchymatous dystrophy of internal organs. Alveolar edema of the lungs. Multiple organ failure.

The cause of death was the progression of multiple organ failure and cryptococcal meningitis.

Discussion

The patient abused alcohol for a long time in the presented case, he was hospitalized with acute psychosis in a psychoneurological dispensary, where pulmonary tuberculosis and HIV infection were diagnosed for the first time during additional examination. The patient was admitted to the department in serious condition after prolonged alcohol intoxication. The patient's condition stabilised after detoxification therapy. Antimycobacterial therapy according to the scheme of an individual treatment regimen, ART, treatment of hepatitis B and C, detoxification therapy, prophylaxis with Biseptol and Fluconazole and symptomatic therapy were prescribed. After 20 days IRIS developed. It was manifested with meningitis and cryptococci were detected in the cerebrospinal fluid 17 days later. Prescribed treatment of cryptococcal meningoencephalitis with Fluconazole in high doses intravenously had a significant positive effect, which made it possible to reduce the dose of the drug to the maintenance level. The treatment was not stopped, but sterility of the liquor was not achieved. After 98 days the patient entered a coma and after 113 days he died from the progression of multiple organ failure and cryptococcal meningitis.

It should be noted that the patient was diagnosed with MDR-TB for the first time, the treatment of which had positive dynamics, despite the progression of multiple organ failure and the presence of

cryptococcal meningoencephalitis. Therefore, although tuberculosis was not the direct cause of the patient's death, the disease itself deepened the severity of the general condition.

The most frequent causative agents of cryptococcosis are *Cryptococcus neoformans* and *C. gattii*, and this disease is mainly associated with HIV immunosuppression and is characterized by the appearance of meningoencephalitis [8, 19, 20, 38, 42]. Therefore, the greatest burden of this pathology falls on HIV-infected persons (the mortality rate when using the best antifungal therapy was 24 % in this group) [32]. *Cryptococcal meningoencephalitis* is associated with high morbidity and mortality among people living with HIV, particularly in late-stage of HIV (AIDS) [9, 16, 27, 28, 32, 37, 39, 42]. According to B.J. Park et al. [24] cryptococcal meningoencephalitis among HIV/AIDS patients is fatal in 65 % of cases after of cryptococcal infection beginning. In the presented case, cryptococcal meningoencephalitis also resulted in death in an HIV-infected patient almost after 3 months of cryptococcal infection beginning.

R. Kajeekul et al. [14] in a retrospective cohort study found the clinical features of cryptococcal meningoencephalitis in HIV-positive individuals compared to HIV-negative individuals and established significant differences between these patients. Thus, patients with HIV-associated cryptococcal meningoencephalitis were younger (average age was 37 years *vs.* 54 years, respectively) and had certain changes in the cerebrospinal fluid: a low number of leukocytes (4 *vs.* 94 cells/mm^3), a lower protein level (69 *vs.* 157 mg/mL), higher glucose level (38.8 *vs.* 21.0 mg/ml) and more frequent cryptococcemia (44.1 *vs.* 20.5 %). At the same time, the mortality rate in both groups was high, but did not differ significantly. The researchers identified the following unfavorable prognostic factors in patients with HIV-associated cryptococcal meningoencephalitis: concomitant diseases, fever, altered mental status, low number of leukocytes and cryptococci in the cerebrospinal fluid. In the case presented by us, the patient has almost the same unfavorable prognostic factors.

R. Rajasingham et al. in their study [27] estimated the average global prevalence of cryptococcal antigenemia to be 4.4 % among HIV-positive individuals with CD4$^+$ lymphocyte count less than 200/μL. Cryptococcal meningitis has been found to be an indicator of HIV treatment program failure and therefore timely HIV testing and prompt medical care remain an urgent priority [27]. To end cryptococcal meningitis mortality among HIV-infected individuals, cryptococcal diagnosis, treatment of meningitis, and preventive screening are urgently needed [16, 27, 38].

Given the high mortality rate of cryptococcal infection among people living with HIV, the World Health Organization recommends cryptococcal antigen (CrAg) screening in all HIV patients with a CD4$^+$ lymphocyte count < 100/μL [16]. J. Wykowski et al. [41] found that a positive CrAg test was a predictor of increased risk of cryptococcal meningitis or death among HIV-infected individuals, and systematic CrAg screening can reduce morbidity and mortality not only in patients with CD4$^+$ lymphocyte counts < 100/μL, but also with the number of CD4$^+$ lymphocytes was 100—200/μL. T.B. Tufa et al. [37] indicate that screening in HIV-infected patients in the emergency department for CrAg can minimize the number of missed cases of cryptococcosis regardless of CD4$^+$ lymphocyte count and viral load.

In the patient from the case presented by us, the number of CD4$^+$ lymphocytes was less than 200/μL (182/μL), and HIV infection was detected for the first time and screening for CrAg was not performed, which is an unfavorable prognostic factor.

I. Eshun-Wilson et al. [12] in their study compared the results of early initiation of ART (less than 4 weeks after initiation of antifungal treatment) and delayed initiation of ART (4 weeks or more after initiation of antifungal treatment) in HIV-positive individuals with concomitant cryptococcal meningitis. The researchers concluded that there was a higher risk of mortality among these individuals with early initiation of ART after a diagnosis of cryptococcal meningitis. Perhaps in the case presented by us, the early start of ART before the diagnosis of cryptococcal meningoencephalitis, which provoked IRIS, against which the progression of cryptococcal infection occurred, was also an unfavorable prognostic factor for the patient's death.

According to S.G.Y. Muzazu et al. [20] predictors of mortality after 2 and 10 weeks among patients with HIV-associated cryptococcal meningoencephalitis were monotherapy with Fluconazole, focal neurological symptoms, diastolic blood pressure < 60 mm Hg, concomitant tuberculosis infection and late diagnosis of cryptococcal meningitis. T.B. Tufa та ін. [37] also found that high-dose Fluconazole monotherapy in HIV-infected patients with positive CrAg tests had a high mortality rate (64 %). Given the ineffectiveness of monotherapy with Fluconazole (even in high doses) of HIV-associated cryptococcal meningoencephalitis, clinical trials are currently underway with the use of combined induction of antifungal therapy (Amphotericin in combination with Flucytosine) [31, 38]. In the case presented by us, the patient received monotherapy with high doses of Fluconazole, which may have been insufficient and also became an unfavorable prognostic factor for death.

Conclusions

Predictors of the fatal outcome of newly diagnosed tuberculosis/HIV co-infection in chronic alcoholism are:

1. Antisocial lifestyle.
2. Concomitant diseases (tuberculosis, chronic VH B and C).
3. Cryptococcal meningoencephalitis.
4. Fever, altered mental status, cryptococci in the cerebrospinal fluid.
5. $CD4^+$ lymphocytes count is less than 200/μL.
6. Lack of early screening for CrAg.
7. Early initiation of ART before the diagnosis of cryptococcal meningoencephalitis, which provokes IRIS, against the background of which cryptococcal infection progresses.
8. Monotherapy of cryptococcal meningoencephalitis with Fluconazole.

Knowledge and practice gaps among medical practitioners contribute to the high fatality rate of cryptococcal meningoencephalitis in tuberculosis/HIV co-infection in chronic alcoholism.

No conflict of interests.
Participation of authors: research concept and design — O.M. Raznatovska, V.I. Petrenko, O.S. Shalmin; collection of material — A.V. Fedorec, A.O. Svitlitsky, O.A. Svitlytska, S.B Noreiko; data analysis — O.M. Raznatovska, V.I. Petrenko, O.S. Shalmin; writing the text and statistical data processing — O.M. Raznatovska, R.M. Yasinskyi; editing of the text — O.M. Raznatovska, V.I. Petrenko.

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Предиктори летального наслідку вперше діагностованої ко-інфекції туберкульоз/ВІЛ при хронічному алкоголізмі (клінічний випадок)

Представлено власне спостереження діагностики ко-інфекції туберкульоз/ВІЛ-інфекція при хронічному алкоголізмі й аналіз предикторів летального наслідку. Пацієнт тривалий час зловживав алкоголем. Потрапив із гострим психозом у психоневрологічний диспансер, де при дообстеженні вперше діагностовано туберкульоз легень і ВІЛ-інфекцію. Пацієнта госпіталізовано у відділення в тяжкому стані після тривалої алкогольної інтоксикації. Після проведення дезінтоксикаційної терапії стан стабілізувався. Призначено антимікобактеріальну терапію за схемою індивідуального режиму лікування, антиретровірусну терапію, лікування гепатитів В і С, дезінтоксикаційну терапію, профілактику бісептолом і флуконазолом, симптоматичну терапію. Через 20 днів розвинувся синдром відновлення імунної системи із виявами менінгіту. Через 17 днів після цього в ліквор виявлено криптококи. Лікування криптококового менінгоенцефаліту флуконазолом у високих дозах внутрішньовенно було ефективним, що дало змогу зменшити дози препарату до підтримувальної. Лікування не припиняли, але санації ліквору не зафіксовано. Через 98 днів пацієнт увійшов у кому, а через 113 днів помер від прогресування поліорганної недостатності та криптококового менінгіту. У пацієнта був вперше виявлений туберкульоз із множинною лікарською стійкістю, лікування якого мало позитивну динаміку, незважаючи на прогресування поліорганної недостатності та наявність

криптококового менінгоенцефаліту. Тому туберкульоз хоча і не був безпосередньою причиною смерті пацієнта, але підсилював тяжкість загального стану.

З огляду на наведений клінічний випадок установлено, що предикторами летального наслідку вперше діагностованої ко-інфекції туберкульоз/ВІЛ при хронічному алкоголізмі є: асоціальний спосіб життя, супутні захворювання (туберкульоз, хронічний вірусний гепатит В і С), криптококовий менінгоенцефаліт, лихоманка, змінений психічний стан, наявність криптококів у ліквор, кількість CD4-лімфоцитів < 200/мкл, відсутність раннього скринінгу на CrAg, ранній початок антиретровірусної терапії до встановлення діагнозу криптококового менінгоенцефаліту, що провокує появу синдрому відновлення імунної системи, на тлі якого відбувається прогресування криптококової інфекції, монотерапія криптококового менінгоенцефаліту флуконазолом. Висока частота летальних наслідків від криптококового менінгоенцефаліту при ко-інфекції туберкульоз/ВІЛ-інфекція на тлі хронічного алкоголізму зумовлена недостатньою обізнаністю практикуючих лікарів.

Ключові слова: летальність, туберкульоз, ВІЛ, хронічний алкоголізм.

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