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**LEPTOSPIROSIS INCIDENCE IN MINSK 2017-2024 AND A CASE REPORT
OF LEPTOSPIRAL MENINGOENCEPHALITIS**

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Actuality. Leptospirosis is a zoonotic disease, caused by *Leptospira* species, can present in a spectrum from mild fevers to fulminant forms such as Weil's disease. Neurological manifestations of leptospirosis are rare, often underdiagnosed due to non-specific symptoms with more common infections.

Aim: to present a case of leptospirosis presenting with meningoencephalitis and to analyse the incidence of leptospirosis over the period 2017-2024 in Minsk, Belarus.

Materials and methods. We obtained case histories from the Minsk City Infectious Disease Hospital, containing the diagnosis of "leptospirosis", over the period from January 2017 to December 2024 to retrospectively analyse the dynamics of disease and parameters. One case in 2025 containing the diagnosis "Leptospirosis: acute meningoencephalitis" was selected for further description and was not included in the general analysis.

Results and their discussion. 37 adult patients (67.6% male, mean age 46.5 ± 15.1 years) were selected. 15 patients (40.5%) presented with jaundice, 4/37 patients (10.8%) presented with neurological manifestations and 3/37 (8.1%) presented with only fever as the initial symptom. The median duration of hospitalization was 11.6 days (IQR: 9.0-15.0 days). 8 patients (21.6%) were admitted to the intensive care unit with a median duration of stay of 4.5 days (IQR: 2.75-5.25 days). Other common initial symptoms were headache/dizziness (37.8%), nausea and vomiting (32.4%), myalgia (32.4%). 19/37 patients had an epidemiological link, with consumption of well water seen in 9 (47.3%) of them. 4 patients (21%) had contact with rats/mice and 4 patients (21%) had travel history. Initial laboratory analyses showed: increasing of white blood cells (WBC) in 45.9% (17/37) of cases, decreasing of platelets (PLT) – 54.1% (20/37). Increased alanine aminotransferase (ALT) and total bilirubin were presented at 63.9% (23/36) and 57.1% (20/35), respectively. Both urea and creatinine were increased in 31.4% (11/35) of cases.

Patient X, a 71-year-old male, presented on his second day of symptoms, with a fever of 38.5°C, myalgia and a dry cough and no significant epidemiological history. In the department, the patient exhibited inappropriate affect, with a persistently jocular demeanor, incongruent with the clinical setting. The condition worsened on day 2, with the patients having a reduced orientation in time, signs of respiratory insufficiency and febrile intoxication syndrome. Laboratory investigations showed the following: WBC $9.38 \times 10^9/l$, lymphocytes 53%, erythrocyte sedimentation rate (ESR) 97mm/h, aspartate aminotransferase (AST) 92.76 IU/l, ALT 64.05 IU/l, creatinine 159μmol/l, urea 9.9 mmol/l, C-reactive protein 58.1mg/l, creatine phosphokinase (CPK) 1569 IU/l. A diagnostic lumbar puncture was conducted, revealing a mild cytosis ($20 \times 10^6/l$) with 75% lymphocytes - leading to the diagnosis of "unspecified meningoencephalitis". PCR-tests of cerebrospinal fluid (CSF) for Herpes simplex viruses (HSV) types 1 & 2, Epstein-Barr virus (EBV), Cytomegalovirus (CMV), Varicella zoster virus (VZV) and Parvovirus B19 were negative. There was an improvement in the cognition, but the patient complained of general weakness and unstable gait. In laboratory analyses increased urea and creatinine persisted. The microscopic hemagglutination tests for leptospirosis (Lepto-MAT) and hantavirus were done and returned positive for *L. hebdomadis* (titre: 1:160). Patient was treated with IV ceftriaxone 2.0g twice a day. The patient was discharged on day 14 with a near-satisfactory condition.

Conclusion. The incidence of leptospirosis is noted to be low, most commonly presenting in middle-aged males and without jaundice. Epidemiologically most cases are related to well-water consumption. Neurological presentations of leptospirosis are rare and this case underscores the diagnostic challenges of neurological leptospirosis and the need for heightened clinical suspicion to ensure timely intervention.