Chapter 13

TBE in Ukraine

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E-CDC risk status: endemic (last edited on 16.03.2024, data as of end December, 2023)

History and current situation

The Ukrainian Scientific and Methodological Center for Tick-borne Viral Encephalitis and Natural Focal Diseases of Arboviral Etiology founded in the year 2005 was established in the Laboratory of Vector-borne Viral Infections of the Lviv Research Institute of Epidemiology and Hygiene. Prevention of TBE is based on the Guidelines "Nonspecific prevention of vector-borne natural focal infections transmitted by ixodid ticks[5] (Table 1).

The presence of active natural foci of TBE infection in the Ukraine was determined by regions, where single cases or outbreaks of human diseases were registered (Figure 1).The main vector of TBE virus in the Ukraine is the European forest tick *I. ricinus*, from which 68.4% of domestic strains were isolated. TBE virus has also been isolated from *D. reticulatus* and *H. plumbeum* (plumbeum) ticks. Potential vectors of TBE virus in Ukraine include *I. crenulatus*, *I. hexagonus*, *I. lividus*, *I. trianguliceps*, *D.marginatus*. (https://ecdc.europa.eu/en/disease-vectors/surveillance-and-disease-data/tick-maps)

In the Ukraine, vaccination against TBE is recommended for individuals visiting endemic areas during the period of highest tick activity (April to November) (Table 1). It is recommended to start vaccination in the fall (September - November), when there is enough time to develop vaccine-protection before potential exposures to the TBEV.

Between 1955 and 2013, a total of 596 cases of TBE (all encephalitis) were registered in the Ukraine (population about 41 million), including 74 (12.5%) imported cases and 522 (87.5%) local cases. The highest number of the 522 autochthonous cases was reported from Crimea (265 cases; 50.7%), followed by Volyn (196 cases; 37.5%), Zakarpattia (24 cases, 4.6%), Dnipro and Ivano-Frankivsk (8 cases each (1.5%), Lviv (4 cases, 0.76%), Vinnytsia, Donetsk, Kharkiv (3 cases, 0,75% each), Mykolaiv and Khmelnytsky (2 cases each, 0,3%) and from Kyiv, Sevastopol, Odesa, and Sumy (1 case each, 0.19%).[3]

From 2011 to 2019 only 2 cases of TBE-encephalitis were detected, 1 in the Kharkiv region and another in the Chernihiv region.[4]

According to the Public Health Centre of the Ministry of Health of Ukraine,[5] 2 cases of viral encephalitis were recorded in Ukraine in 2020.

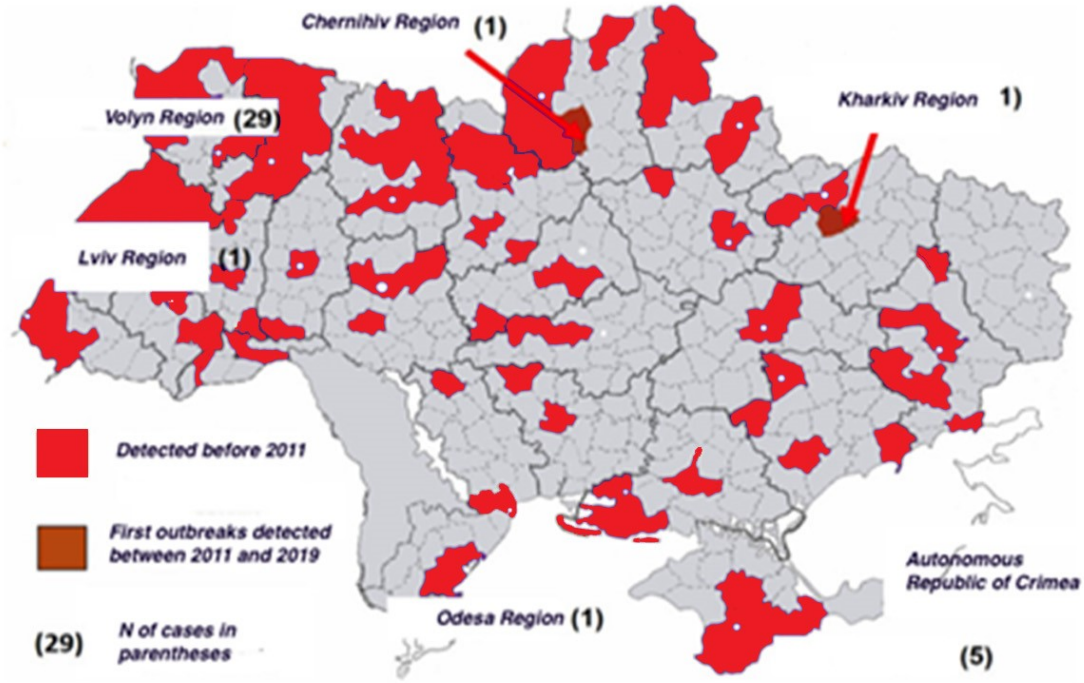
Table 2: Reported cases of TBE encephalitis in the Ukraine by period 1955-2020[3,4,5]

Time period	Case (TBE encephalitis)
1955-2013	522 autochthonous cases 74 imported cases
2011 – 2019	2 reported cases
2020	2 reported cases

Overview of TBE in Ukraine

Table 1: TBE in Ukraine	
Virus subtypes isolated	All 3 major TBEV subtypes are circulating in the Ukraine.[7]
Reservoir animals	Cows, buffaloes and goats[4]
Percentage infected ticks	Unknown
Dairy product transmission	raw milk and milk products from cows and goats[4]
Case definition used by authorities	**Clinical criteria** Any person with symptoms of CNS inflammation (e.g. meningitis, meningoencephalitis, encephalomyelitis, encephalo-radiculitis). **Plus** **Laboratory criteria** Serologic results should be interpreted according to vaccination and previous exposure to other flavivirus infections. Confirmed cases in such situations should be confirmed by neutralization reaction or other equivalent tests.[2]
Completeness of case detection and reporting	Incomplete
Type of reporting	Mandatory
Other TBE surveillance	Tick infection with various pathogens is monitored by the regional Centers for Disease Control and Prevention. Regional Centers for Disease Control and Prevention annually conduct a study of tick populations – to identify species found in a given territory.[6]
Special clinical features	Risk groups: military, foresters, tourists, fishermen, shepherds[1]
Licensed vaccines	TicoVac vaccine (0.5 ml) is indicated for active (prophylactic) immunization of persons aged 16 years and older against TBE. The TicoVac Junior vaccine (0.25 ml) is indicated for active (prophylactic) immunization of children aged 1 to 15 years[5]
Vaccine recommendations	Vaccination is indicated in TBEV-endemic areas: Crimea (Simferopol, Sudatsky, Biloghirsky, Bakhchysaray, Alushty, Kirovsky, Krasnogvardiysky districts; Great Yalta, Laspi Bay of the Sevastopol district), Volhynia (Ratnivskyi, Rozhishchenskyi, Kovelskyi, Kivertsivskyi, Starovyzhivskyi, Kamin-Kashirskyi districts, Lutsk city, Kovel city), Lviv (Yavorivskyi district), Odessa (Balta city) oblasts.[3]
Vaccine uptake	Vaccination is not mandatory
National Reference center for TBE	Ukrainian Scientific and Methodological Center for Tick-borne Viral Encephalitis and Natural Focal Diseases of Arboviral Etiology located at the Laboratory of Vector-borne Viral Infections of the Lviv Research Institute of Epidemiology and Hygiene.[5]
Additional relevant information	The full course with 3 vaccine doses should be started in the fall (September - November), to give enough time to develop immune protection against TBEV. The second dose is administered in spring (in March - April), the third dose one year after the second dose. Further revaccinations are carried out 3 years later and then every 5 years (every 3 years for individuals above age > 65 years).[3]

Figure 1: Enzootic territories (natural foci) for tick-borne viral encephalitis as of 01.01.2020 in Ukraine (https://phc.org.ua/sites/default/files/users/user90/risk_2020_38.pdf).



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