Chapter 12b

TBE in Bulgaria

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E-CDC risk status: endemic (lack of consistent testing and reporting)

History and current situation

First cases of probable tick-borne encephalitis (TBE) were reported in 1961 by Andonov et al. in eastern regions of Bulgaria.¹ Possible TBE cases with the typical two-wave fever, originating from consumption of raw goat milk, were described back in 1953 by Vaptzarov et al. in southern Bulgaria.² Investigations in the 1960s were able to isolate 3 tick-borne encephalitis virus (TBEV) strains from *Haemaphysalis punctata* and 1 from *Dermacentor marginatus* ticks from goats and sheep in the district of Plovdiv.³ The antigenic properties of these 4 virus strains were identical to the highly virulent strain "Hypr" of the European subtype of TBEV (TBEV-EU).³

Laboratory diagnosis of TBE, based on serology using complement fixation assay, was introduced in Bulgaria in the 1970s. Since then single case reports of presumed TBE have been reported, but these lack reliable microbiological confirmation.⁴⁻⁵ However, investigations of ticks between 1974 and 2002 resulted in the isolation of 8 TBEV strains among 6,849 ticks investigated.⁶

Beginning in 2009, the National Reference Laboratory of Vector-Borne Pathogens introduced reliable laboratory diagnosis methods for TBE, based on polymerase chain reaction (PCR) and enzyme-linked immunosorbent assay (ELISA), and identified the first 3 confirmed TBE cases in Bulgaria: 2 cases in 2009 and 1 case in 2012.⁷ Two more TBE cases were identified in 2015, one case was reported in 2017, one case in 2019, two cases in 2020, and one case in 2021.

Nationwide seroprevalence survey on circulation of TBE virus in Bulgaria found an overall seroprevalence of 0.6% (Fig. 4). However, district analysis showed TBEV seroprevalence to be up to 4.0%–4.8%, indicating that the TBEV infection seems to be more widespread in the country than previously described.^{8–10} Though TBE cases are reported sporadically, TBEV circulates in Bulgaria, causing human cases associated either with tick bites or consumption of unpasteurized milk.

Overview of TBE in Bulgaria

Table 1: Virus, vector, transmission of TBE in Bulgaria		
Viral subtypes, distribution	European subtype of TBEV (TBEV-EU) ³	
Reservoir animals	Not known	
Infected tick species (%)	Dermacentor marginatus, Haemaphysalis punctata	
Dairy product transmission	Yes	

Table 2: TBE reporting and vaccine prevention in Bulgaria

Mandatory TBE reporting	TBE reporting is mandatory since 2014. Both physicians and laboratory report. EU case definitions for confirmed, probable, and possible TBE case are accepted.	
Other TBE surveillance	No	
Special clinical features	Biphasic disease	
Available vaccines	No information available	
Vaccination recommendations and reimbursement	No	
Vaccine uptake by age group / risk group / general population	No information available	
Name, address/website of TBE NRC	National reference laboratory of vector-borne pathogens at the National Center of Infectious and Parasitic Diseases, Sofia, Bulgaria www.ncipd.org	

Figure 1: Burden of TBE in Bulgaria over time

Case reporting is sporadic, and thus incidences cannot be calculated. Here only microbiologically confirmed cases are mentioned.

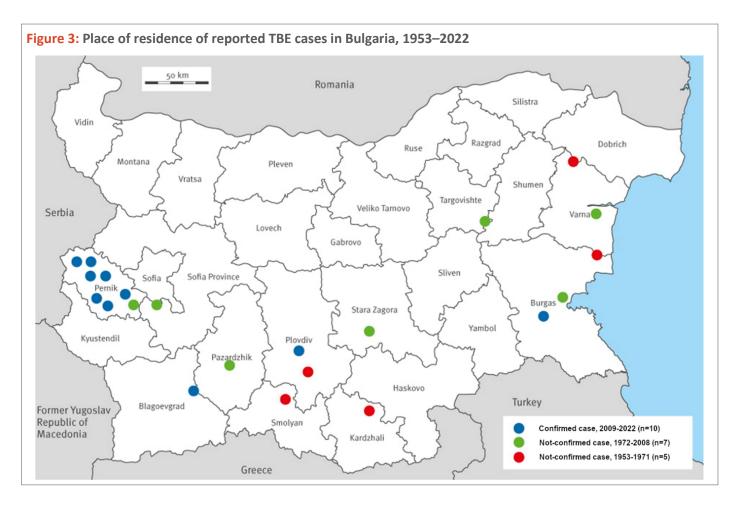
Case numbers by year are listed in the appendix.

n.c. = not calculable

Source Data: Appendix—Figure 1

Figure 2: Age and gender distribution of TBE in Bulgaria

No table can be provided, the number of cases is too low to give any meaningful interpretation.

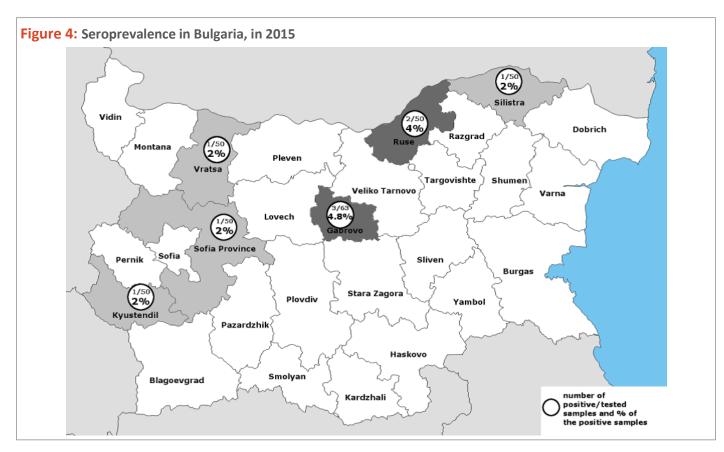


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Appendix

Source data: Figure 1

Burden of TBE in Bulgaria over time

Year	Number of cases	Incidence / 10 ⁵
2009	2	n.c.
2010	0	n.c.
2011	0	n.c.
2012	1	n.c.
2013	0	n.c.
2014	0	n.c.
2015	2	n.c.
2016	0	n.c.
2017	1	n.c.
2018	0	n.c.
2019	1	n.c.
2020	2	n.c.
2021	1	n.c.
2022	0	n.c.

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