



Tick-Borne Encephalitis Virus

TBE (Tick-Borne Encephalitis) is a viral disease, transmitted by the bite of an infected tick, which attacks the central nervous system. TBE is a serious infection that can result in long-term neurological symptoms in patients, and even death.

The virus can infect the membrane that surrounds the brain and spinal cord (meningitis), the brain itself (encephalitis), or both (meningoencephalitis). TBE is characterized by flu-like symptoms and shows the clinical signs of meningitis and/or meningoencephalitis. Symptoms are similar to yellow fever, Japanese encephalitis and dengue fever.

The prevalence of TBE has increased in Europe by almost 400% in the last 30 years. There are more than 10,000 TBE cases reported in Europe each year.

Transmission

The virus is transmitted through the bite of an infected tick. The *Ixodes ricinus* tick (common castor-bean tick) is prevalent across Europe. Not every tick transmits the TBE virus, but the rate of infestation in some high-risk areas can be high.

TBE-infected tick populations are particularly high in regions of Austria, Czech Republic, Slovenia, Germany, Switzerland, Hungary, Poland, Sweden, Finland, Russia, Estonia, Latvia, Lithuania, Belarus and Ukraine. In certain areas ticks can be found at altitudes of up to 1,800 metres above sea level; infections of the TBE virus have been reported at altitudes of 1,300 metres. Ticks are most active from March through November, with greatest activity in spring and summer.

People are most at risk of contracting TBE if they participate in outdoor activities that include hiking, cycling, camping, golfing, or picnicking in the grasslands or wooded areas of these endemic areas.

Ticks live in the soil and climb as high as 20 to 70 centimetres on grass and bushes in their search for a blood host (animal or human). A person may pick up a tick from vegetation while walking through grasslands, along forest paths, across lawns or in gardens.

Ticks have temperature-sensitive olfactory organs that detect potential hosts. They are likely to attach to hair-covered portions of the head, behind ears, to elbows and backs of knees, and to hands and feet. Due to their small size, ticks are usually not noticed until well attached to the unsuspecting human host.

Following a tick bite, transmission can occur in a matter of seconds.

Prevention

There is no known treatment for those infected with TBE and the only way TBE infection can be successfully prevented is through vaccination.

In 2006 Baxter Corporation launched FSME-IMMUN in Canada, a vaccine that protects against tick-borne encephalitis. More than 85 million doses of FSME-IMMUN have been administered in more than 20 countries in Europe since 1979. FSME-IMMUN is the only TBE vaccine licensed and available in Canada.

Other measures of general prevention include:

- Avoid tick-infested areas when possible.
- Wear light-coloured long-sleeved clothes, tight at the wrists and ankles, and shoes that cover the whole foot. Clothes must be completely closed to be effective.
- Apply DEET to skin and permethrin to clothing.
- Check skin and clothes frequently for ticks.
- Remove ticks with fine-tipped tweezers. Grasp the tick firmly and as closely to the skin as possible. Using a steady motion, pull the tick away from the skin without rotation.

These measures may help to prevent transmission but nothing is as reliable as vaccination.

“TBE/ FSME vaccination is recommended within Europe for all people residing in or travelling to endemic areas.”
M. Kunze, MD
Chairman, International Scientific Working Group on TBE (ISW), Munich 2006