TBE NEWS

ALIMENTARY TBE OUTBREAK IN EASTERN FRANCE

Background

TBE is most often the result of a tick bite. However, infections can also occur by consumption of non-pasteurized milk and milk products (see, e.g., Snapshot week 16/2022, 8/2022, 33/2020, 25/2020, Newsletter March 2019). In France, TBE is a rare disease, usually diagnosed in the Alsace region with a yearly incidence of about 0.5/100,000 inhabitants. In April 2020, an outbreak occurred in the Ain department in Eastern France, where TBE had never been reported. A French team of scientist has comprehensively analyzed this outbreak.

Results

In April 2020, an outbreak of encephalitis and meningoencephalitis with 43 patients who all, except one, had consumed fresh goat cheese made of raw milk coming from a single local producer. The suspected goat flock immediately was confined into stall, a sanitary alert was decreed on May 10, produced cheese was recalled, and the goat cheese production was stopped.

The suspected farm included 56 dairy goats and three dairy cows. The goats had grazed in only one pasture of which half the area was wooded by a large mixed deciduous and coniferous forest. On May 27, 6/30 goats tested were seropositive for TBE virus (by ELISA and NT assay). One week later, all stalled goats were analyzed, and 11 goats were seropositive (20%) with one seroconversion in the goats tested on May 27.

TBE virus genome was detected in the tank of goat milk (but was absent in the tank of cow milk) and in milk of individual goats. Within a couple of kilometers away from the suspected farm seropositive animals were found in three of five farms, and all animals had grazed in the meadows located close to the same forest.

Ticks were collected by dragging on June 16 in the suspected area of infection (a total of 120 larvae, 907 nymphs, 27 females and 31 males of questing *Ixodes ricinus* and 1 female *Dermacentor reticulatus*). Nine pools of nymphs and one male were positive for TBE virus RNA with a minimal infection rate of 0.22 in the nymphs. No TBE virus could be detected in small mammals around the pasture.

Full-length genome sequences were obtained from milk, ticks and contaminated cheese, and all sequences were identical. The isolated strain TBEV_Ain_France_2020 had only limited homology to a strain isolated in the Alsace region and was more related to strains from ticks isolated in the federal state of Lower Saxony in Germany.

Discussion

This first occurrence of an alimentary TBE outbreak in France has led to an unexpected high number of cases. The high infection rate in the goat flock suggests regular contact between TBE virus-infected ticks and goats in spring 2020. TBE positive animals were also detected in other farms indicating that TBE virus is well established in this area, and probably to a larger extent in the Ain department where no TBE cases had ever been reported. Evidence suggests that the geographic range of TBE virus is expanding in Europe (e.g., in The Netherlands, Belgium, United Kingdom), and this expansion also occurs in France (e.g., in Loire and Haute Loire). One cannot exclude that TBE virus has been circulating in Ain department undetected for decades. Indeed, TBE cases are likely to be underdiagnosed in France. The Ain outbreak also highlighted the need for improving surveillance, detection, and prevention of TBE in France. Local production and consumption of non-pasteurized cheese is increasing in France where 40,000 tons of raw-milk food are produced yearly.

Literature

Gonzalez et al.

A one-health approach to investigating an outbreak of alimentary tick-borne encephalitis in a non-endemic area in France (Ain, Eastern France): A longitudinal serological study in livestock, detection in ticks, and the first tick-borne encephalitis virus isolation and molecular characterization

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