



## SHORT REPORT ON THE “FOURTH SOUTHERN GERMAN TICK CONGRESS”, STUTTGART-HOHENHEIM (GERMANY), MARCH 12-14, 2018

The Fourth Southern German Tick Congress was held in the lovely atmosphere of the rococo auditorium of the palace of Hohenheim. 30 lectures were presented (mostly in German) and 13 posters dealing with various aspects including taxonomy of ticks (also ancient ticks), physiology of ticks, vaccine development, pathogens transmitted by ticks, ecology of ticks, control of ticks, spreading of ticks and pathogens. Here, a selection of some reports is presented.

### New ticks in Germany

While so far, 18 species of Ixodidae have been described in Germany, L. Chitimia-Dobler reported on new/exotic ticks in Germany. Among these are *Ixodes inopinatus*, which is sympatric with *I. ricinus* in Germany, while in the Mediterranean region, this species is allopatric with *I. ricinus*. This species is a host for TBE virus and Rickettsiae. It is assumed that this tick species has been mixed up with *I. ricinus* in the past and may be widespread in many regions within Germany and also in other European countries. *I. festai* is a tick whose natural habitat is the Mediterranean region but has now been detected at 14 places in Germany. *I. cornutus*, a tick which has so far been detected only in Tadjikistan, has been found on a marten in the Federal State of Baden-Wuerttemberg. The tick *I. lividus* is very rare in Germany and could be found on birds caught in the Federal State of Hesse. In addition, *Rhipicephalus sanguineus*, *Hyalomma rufipes* and *H. marginatum* could be found. These ticks are common in the Mediterranean region and may have been imported by birds.

*I. frontalis* is specialized on birds; this tick does not attack humans. It was described as early as

1795, but until 2007, it has never been found again in Germany and was assumed to be lost in Germany. M. Drehmann reported on *I. frontalis* collected from dead birds (part of an Usutu virus project). A total of 209 ticks could be identified collected from birds and in addition, 1051 ticks were collected by flagging in urban regions around Stuttgart and Mannheim (Southern Germany) and Hannover (Northern Germany). This tick species may cause the so-called avian tick-related syndrome, which can induce depression and skin bleedings and often is lethal for birds.

### Ticks in Sudan

Only limited information is available on ticks in Sudan. In a cooperation with various institutes in Sudan, L. Chitimia-Dobler identified a number of tick species collected from farm animals and dogs. Ticks from three genera were identified: *Amblyomma*, *Hyalomma* and *Rhipicephalus*. A total of 16 species could be identified and two *Rickettsia* species could be detected in ticks. The extend of tick infestation strongly varied from only some ticks to several hundreds of ticks collected from animals, and the high number of tick species identified indicate a great significance of ticks as pathogens for Sudan.

### Ticks in South-Eastern Bulgaria

M. Pfeffer reported on a study carried out in a preserve area (Strandja Nature Park) and where a total of 1541 ticks of the genera *Dermacentor*, *Haemaphysalis*, *Hyalomma*, *Ixodes* and *Rhipicephalus* have been collected (12 species in total). The following pathogens could be identified in ticks: *Anaplasma phagocytophilum*, *Babesia* spp., *Borrelia*



*burgdorferi s.l.*, *Rickettsia spp.* and *Neoehrlichia mikurensis*. 23.2 % of the ticks were at least positive for one pathogen. A high prevalence (48.3%) of *Rickettsiabacteria* were found in ticks collected (mostly in *I. ricinus*) and co-infections were proven in 2.5%. The study indicates a high prevalence for pathogens in ticks (32.2% in nymphs) in an area near the Black Sea in Bulgaria. It is suggested that the southern white-breasted hedgehog *Erinaceus concolor* is a host maintaining circulation of tick-borne pathogens and *R. monacensis* has been detected in Ixodes ticks from this hedgehog for the first time. The prevalence in ticks from hosts was higher for most pathogens and more tick genera collected from hosts were found to be positive in comparison to ticks collecting by flagging from vegetation.

## Abundance of ticks in urban areas

D. Hauck reported about the abundance of ticks in ten different places in the metropolitan area of Hannover (Northern Germany) collected from April to October 2017. A total of 1770 ticks (1528 nymphs and 242 adult ticks) were collected, of which 1630 were *I. ricinus*. In addition, 25 *I. inopinatus* and 3 *I. frontalis* ticks were found. The monthly tick density varied from 0 to 167 ticks/100 square meter (average: 25 ticks) with a peak in May/June. Most ticks were found in mixed forest areas.

## 2017, an unusual tick year in Germany

G. Dobler reported about TBE in Germany, 2017. A total of 499 TBE cases have been notified, which was the second highest number ever reported in Germany. More than 85% of cases (426) occurred in the two Federal States of Bavaria and Baden-Wuerttemberg (Southern Germany). Bavaria notified the highest number of TBE cases since the implementation of the TBE reporting system in 2001. An increase of cases in Germany started in calendar week 20 and a plateau was reached in calendar week 40. However, a second peak in autumn could be seen in Bavaria. A significant increase of TBE cases occurred in the alpine upland compared to previous years. In general, a

geographical shift of TBE cases could be observed from East to West in Southern Germany during the last decade.

An alimentary TBE outbreak has been notified near Bebenhausen/ Tübingen (Southern Germany) caused by consumption of unpasteurized goat milk. Seven individuals became ill. Additional fourteen individuals who have consumed this milk and who were vaccinated did not develop TBE (accept one patient, whose last TBE vaccination was 15 years ago). The virus strain which induced this outbreak was genotypically different from a strain which was responsible for an alimentary outbreak near Zwiefalten (Southern Germany) in 2016. In a poster, R. Saier et al. showed that the infectious TBE virus concentration decreased during the production of cheese from raw cow milk (experimentally infected with strain Hypr), but infectious virus particles could still be detected in milk, whey and fresh cheese after 14 days of storage.

## TBE in the Odenwald region and Upper Rhine region

The Odenwald is a mountain region in South Hesse/Baden Wuerttemberg/ Bavaria. It is a known TBE risk region, but a comprehensive analysis is yet missing. During 2002 to 2007, some severe TBE cases were recorded and the question arose if the virulence of circulating TBE virus strains has changed. T. Lenhard has reported about a project in which community members were included as multipliers in flagging activities of large areas (rasters, GPS coordinates) of the Odenwald region in 2012/2013. In total, 17909 ticks have been collected and were analyzed in 2242 pools for the presence of TBE virus. Six *I. ricinus* pools and one individual *Dermacentor reticulatis* tick were TBE positive. Sequence analyses revealed that in the counties Bergstraße and Odenwaldkreis the isolates were related to Czech isolates (Eastern lineage), while isolates from the Rhein-Neckar county were more related to Southern German/Swiss virus strains (Southern lineage).



G. Dobler reported about analyses of strains collected in the Upper Rhine region (Ortenau county and Emmendingen county and to the west of the Rhine in the French Alsace region) which is located south of the Odenwald region. In 2016/2017, a total of 4697 ticks have been collected and in four ticks, TBE virus could be detected. Phylogenetic analyses revealed that the strains originated from different clades and a French isolate was totally different from a strain isolated in 1963. In summary, these findings indicate a dissemination of TBE virus strains from East to West.

## TBE in pregnancy

In September 2017, it happened that a TBE virus infection occurred in the 21. calendar week of gestation. Clinical symptoms became extremely severe in the 24. calendar week needing intensive medical care of the pregnant woman. In January 2018, a healthy child was born, and the mother recovered. TBE PCR analyses of the umbilical cord blood and the blood of the mother were negative. The infant was TBE IgM negative and IgG positive (1:320 of the umbilical cord and also in the mother's blood). In the three-month-old infant, the TBE IgG titer decreased to 1:80. Thus, there has been no in utero transmission of the virus from the mother to the child. G. Dobler discussed this case and other rarely reported TBE and other flavivirus infections during pregnancy.

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