

### **"Tick rapid tests" for the detection of Borrelia are not recommended by the NRZK / CNRT**

For several years, various manufacturers have been propagating so-called "tick rapid tests" for the detection of Borrelia in ticks removed from humans. Such tests are intended to quickly clarify the risk of Lyme disease after a tick bite and help to start antibiotic therapy as soon as possible. The "tick rapid tests" are based on DNA antigen detection using PCR or specific antibodies, respectively. Each method has its own characteristics.

The number of commercially available "tick rapid tests" has increased during the past years, and the tests are actively promoted by the manufacturers. From a scientific and medical point of view, however, it is discouraged to use such tests. Based on the following facts, the Swiss national reference center for tick-borne diseases (NRZK / CNRT) and the ESCMID Study Group for Lyme Borreliosis (ESGBOR) clearly advice against the use of "tick rapid tests":

- In Europe, between 15-25% of ticks are infected with Borrelia and the risk of infection with clinical symptoms following a tick bite is between 1-5% (i.e. 1 tick bite out of 20 or 1 out of 100).
- A positive "tick rapid test" result only shows that the tick contained Borrelia but does not mean that the Borrelia were transmitted nor that they were pathogenic. Transmission of Borrelia during the first 16 hours of attachment is unlikely and many ticks are detected and removed before that.
- An antibiotic treatment is indicated if clinical symptoms occur and the medical findings lead to the diagnosis of Lyme disease. The decision for an antibiotic treatment should not be based on positive results of a "tick rapid test".
- No published study has assessed the quality of these tests or attempted to standardize them. The methods used, which can be very efficient under certain circumstances, also have limitations in terms of specificity and sensitivity and can lead to false interpretations.
- Studies have indicated that people also developed infections when the analyzed ticks were negative for Borrelia, possibly because another, undetected tick caused the infection or because the tests used produced a false-negative result.
- In case of a negative test result, the person risks a false sense of security and is likely to neglect checking for relevant skin inflammation and this may delay diagnosis resulting in more severe disease.
- The use of these fairly expensive tests does not guarantee a reliable result. Furthermore, it can lead to over-treatment of non-infected patients.

The NRZK recommends the following measures for protection against ticks and tick-borne pathogens:

- Wear clothes that cover the skin as well as possible (long trousers, long sleeves). Wear light-colored clothing so ticks can be detected more easily. Wear closed shoes; shirt tails covered by the trousers and the trouser legs covered by the socks. Dresses, shoes and exposed skin may be sprayed with an anti-tick spray.
- Walk on wide paths and avoid contact with grass and bushes. During and after the walk, check the clothes and uncovered parts of the body for the presence of ticks.
- At home, examine the entire body. Repeat this procedure over the next few days.
- Against TBE, an effective vaccine is available. Vaccination is recommended for all persons aged six and over who live or stay in risk areas.
- So far, no vaccination against Lyme disease exists. However, since *Borrelia* are located in the intestines of the tick, it takes about 16 hours after a tick bite until these bacteria are transmitted to the tick host.
- If an engorged tick is found, it should be removed immediately. Using tweezers (or fingernails if no removing tools are available), grasp the tick as close to the skin as possible and pull it straight out. Disinfect the skin and write down the date of the tick bite. It is not necessary to see a doctor to remove a tick, nor is it necessary to let a doctor remove the "head" of the tick if it has remained lodged during removal.
- If symptoms such as headache, joint pain, redness of the skin or flu-like symptoms occur after a tick bite, a doctor should be consulted immediately.
- Tick bites can be monitored and reported using the "Tick - Tick Prevention" app: users can report time and location of a tick bite as well as the affected body region, age and sex. In return, the app reminds the user after 5, 10 and 28 days to check the site of the tick bite and to take care of the occurrence of any symptoms.

#### References:

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