SURVEILLANCE REPORT

Rabies

Annual Epidemiological Report for 2019

Key facts

- For 2019, EU/EEA countries reported five human *Lyssavirus* infections. Four human cases of travel-related rabies were reported by Italy, Latvia, Spain and Norway with exposure in Tanzania, India, Morocco and the Philippines, respectively. One locally-acquired fatal case of *European bat lyssavirus* (EBLV-1) infection was reported by France.

Rabies is a disease caused by rabies virus (a Lyssavirus). Classic rabies is a zoonosis (infection that could spread from animals to humans), and most animals are susceptible to it. The main reservoir is wild and domestic canids (dogs, wolves, foxes, coyotes, dingoes, jackals). Six other Lyssaviruses are now recognised for which bats are the reservoir. Their potential to transmit disease to humans is variable. Of these, two are present in Europe (European bat lyssavirus 1 and 2). Transmission normally occurs through a bite or direct contact with the saliva of an infected animal. After an incubation period of 3–8 weeks (though sometimes much longer), non-specific symptoms appear, such as headache, fever and numbness of the skin around the site of the bite. A phase of seizures and eventually coma follows, which almost invariably lead to the patient's death. Prevention is possible by vaccination, including post-exposure immunisation, given as soon after the exposure as possible. Preventive veterinary measures include proper vaccination of cats and dogs. Oral vaccination has proven effective in preventing the spread of disease within wild animal populations.

Methods

This report is based on data for 2019 retrieved from The European Surveillance System (TESSy) on 29 October 2020. TESSy is a system for the collection, analysis and dissemination of data on communicable diseases.

For a detailed description of methods used to produce this report, refer to the *Methods* chapter [1].

An overview of the national surveillance systems is available online [2].

A subset of the data used for this report is available through ECDC's online *Surveillance atlas of infectious diseases* [3].

For 2019, 30 EU/EEA countries reported case-based data (Liechtenstein did not report). Twenty-six countries used the EU case definition, three countries used an alternative case definition (Denmark, Germany and Italy) and one country did not specify the case definition used (France). Reporting is compulsory in 29 countries and cases are reported as 'other' in the United Kingdom. Surveillance is comprehensive in all reporting countries and mostly passive.

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Epidemiology

For 2019, EU/EEA countries reported five human *Lyssavirus* infections. Four human cases of travel-related rabies were reported by Italy, Latvia, Spain and Norway with exposure in Tanzania, India, Morocco and the Philippines, respectively. The cases reported by Italy, Latvia and Norway were most probably infected through exposure to dogs, while the case reported by Spain was most probably infected through exposure to a cat. One locally-acquired case of *European bat lyssavirus* 1 (EBLV-1) infection was reported by France.

For 2014, three cases of rabies were reported by Spain, France and the Netherlands following exposure in Morocco, Mali and India, respectively. For 2015, none were reported. For 2016 and 2017, France reported one travel-related case each year, with exposure in Pakistan and Sri Lanka, respectively. For 2018, one case of travel-related rabies was reported by the United Kingdom. The case was bitten by a cat in Morocco [4,5].

Discussion

In Europe, human rabies is a very rare, vaccine-preventable zoonosis. Once the clinical symptoms have appeared, it is fatal. Very few cases of rabies in humans are reported annually in the EU/EEA and most Member States have not had locally-acquired cases for decades. However, 2019 saw the highest number of rabies cases reported for one year since 2007.

Since 2006, only France and Romania have had reported locally-acquired rabies cases. The case in France resided in the overseas department of French Guiana where he became infected in 2008. In Romania, there was on average one case per year until 2012, the year of the last locally-acquired infection in the country.

Lyssaviruses other than the *rabies lyssavirus* (RABV) have been detected in the EU/EEA and EU neighbouring countries. EBLV-1 and EBLV-2 have bats as their main host and, on rare occasions, they have been linked to infections in other animals and humans [6]. In 2018, 45 EBLV-1 and EBLV-2 bat cases were detected in France, Germany, Hungary, the Netherlands, Poland, Spain and the United Kingdom (UK) [7]. EBLV-1 has been detected in sheep in Denmark [8], in a stone marten in Germany [9], as well as in cats in France [10]. Four human deaths due to EBLV-1 and EBLV-2 have been reported so far in Europe: Ukraine (1977), Russia (1985), Finland (1985) and the UK (2002) [11]. The locally-acquired fatal case of EBLV-1 infection reported by France for 2019 is therefore an unusual, but not unexpected event.

In Europe, bites resulting in rabies exposure are typically from foxes and stray dogs, but also occasionally from raccoons. In many places throughout Asia and Africa, stray dogs are the main source of infections for humans. Illegal importation of pet animals poses a risk of rabies being imported, as reported in France in 2015 [12]. Another source of infection may be through organ transplantation [13]. The re-emergence of animal rabies in northern Italy during the period 2008–2011 and Greece in 2012–2013 underlines the importance of maintaining high levels of awareness [14].

Rabies surveillance data on animals in Europe are available from the ECDC/EFSA summary report on trends and sources of zoonoses, zoonotic agents and food-borne outbreaks [7] and the WHO Collaborating Centre for Rabies Surveillance and Research [15].

Public health implications

It is important to inform the public, especially those travelling to endemic areas, of the risk of contracting rabies if bitten by certain types of mammalian animal hosts, including unvaccinated dogs, foxes, bats and cats [16,17]. Preventive measures include vaccination of domestic carnivores and oral vaccination of wildlife - i.e. red foxes (*Vulpes vulpes*) in Europe.

In the event of exposure to a potentially infected animal, timely prophylaxis is of the utmost importance and knowledge of the epidemiological situation is vital to decide on appropriate post-exposure measures. Treatment consists of wound care, vaccination and passive immunisation with immunoglobulin, if indicated. To be effective, treatment has to be administered as soon as possible after exposure. Specific safety measures should be followed for organ transplantation [15]. People at increased risk of rabies virus infection should consider pre-exposure vaccination.

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