Trichinellosis acquired in Senegal from warthog ham, March 2009

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Three confirmed and three suspected cases of trichinellosis have been reported in France with onset of symptoms in March 2009, linked to consumption of smoked warthog ham in Senegal.

Case detection and description

In early May 2009, the French National Reference Centre (NRC) for *Trichinella* was informed about three unrelated patients returning from Senegal who had high titres of specific anti-*Trichinella* antibodies (ELISA confirmed by western blot, LDBio Diagnostics, Lyon, France). Subsequently, the NRC identified a cluster of at least three confirmed cases according to the case definition criteria for trichinellosis defined in the guidelines of the Food and Agriculture Organization of the United Nations (FAO), World Health Organization (WHO) and World Organization for Animal Health (OIE) [1]. The patients were interviewed with a standard questionnaire available at the NRC web page [2]. It was established that the three patients, who lived in different regions of France, became infected after consumption of smoked warthog (*Phacochoerus africanus*) ham around mid-February 2009, in the same hotel in Saint–Louis (Ndar) in Senegal. The typical clinical symptoms (fever, facial and limbs oedema, myalgia) and biological signs (high eosinophilia ranging from 1 to 3.3 G/l, increased levels of muscular enzymes) appeared from early March to early April. No cardiac or neurological complications were observed. Only one patient was hospitalised, in France, for two weeks. All three patients were treated with albendazole (7.5 mg/kg twice a day for 15 days) and corticosteroids.

Outbreak investigation

Trichinellosis was suspected in three additional persons. Two of the suspected cases were the wife and the husband of two of the confirmed cases; they felt sick and tired but without typical signs. The third suspected case was a colleague of one confirmed case who presented suggestive signs (fever and diarrhoea) while still in Senegal where he lives. All three stayed in the same hotel and shared meals with the confirmed cases. Two of the suspected cases tested negative for anti-*Trichinella* antibodies but these tests were performed early after the suspected date of infection and no subsequent assays were performed. The three suspected cases were also treated with albendazole as they shared meals with the confirmed cases.

The hotel, in which the three confirmed and the three suspected cases stayed and were infected, hosts guests from different European countries. According to the hotel director, no other cases of trichinellosis were reported amongst the guests or staff and their families although they had also consumed warthog ham. He stated that the warthog meat is usually deep-frozen for several weeks before being processed as ham. The incriminated warthog ham was not available for parasitological examination. So far, no similar cases related to these index cases have been reported, although French and European networks of parasitologists were alerted by email. The Senegalese veterinary services were also informed about this outbreak.

Discussion

Human trichinellosis was first reported in Senegal in the 1960s, when an outbreak involving nine French expatriates occurred after consumption of warthog meat coming from the Senegal delta region (Boundoum) [3]. Subsequent veterinary studies reported a 4% prevalence of *Trichinella* infection in 450 Senegalese warthogs [4]. Pozio *et al.* [5] identified isolates from carnivore mammals of neighbouring Guinea as belonging to the species *Trichinella britovi* but could not find *Trichinella* in any of the 10 warthogs examined. *T. britovi* could also be present in Senegal and experiments have shown that this species of *Trichinella* is partially resistant to freezing [6]. Moreover, there is a lack of reliability and precision of the temperature in non industrial freezers. Outbreaks of human trichinellosis related to *Suidae* meat are not very frequent in Africa, although small outbreaks related to wild boar (*Sus scrofa*) have been described in French expatriates living in Algeria [7], to warthog (*Phacochoerus sp.*) in Ethiopia and Tanzania and to bush pigs (*Potamochoerus sp.*) in Kenya [8]. The French NRC also documented sporadic cases from Kenya (two infected persons) in 1995 and from Cameroon in 1999 (one infected person) [9]. In Africa, meat is usually consumed well done and pork is not consumed by the Muslims, which explains the fact that trichinellosis has been documented mostly in Europeans. Travel in endemic regions is a classical driver for acquiring trichinellosis and travellers should be informed of the risks of eating raw or rare meat products, and particularly game meat such as warthog in Africa [10].

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