

Outbreak of Trichinellosis in Elin Pelin, January – March 2011

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Abstract: The local hospital authorities in Elin Pelin city reported an outbreak of trichinellosis on 10 March 2011 to the Regional Health Inspectorate (RHI). An epidemiological investigation was carried out in order to determine the extent of the outbreak, identify the source and to propose control measures. The National Diagnostic Scientific Research Veterinary Institute (NDSRVI) in Sofia conducted a veterinary investigation. The source of infection was minced meat and row sausages prepared from domestic pork and horse meat. The animals were bought alive from an Elin Pelin citizen.

An active search for cases was conducted by RHI in Sofia region among medical laboratories, general practitioners and hospital physicians. Two patients with high temperature, facial oedema and muscle pain in the limbs were admitted in Elin Pelin Hospital. 34 more cases were found and registered after that. 24 of them had manifested clinical signs – 17 were treated in hospital and 7 were treated in outpatient conditions.

Key words: trichinellosis, outbreak, *Trichinella spiralis*, *Trichinella britovi*

Introduction

Trichinellosis is a parasitic infection with annual outbreaks in Bulgaria. For the past 10 years 60 outbreaks of trichinellosis were reported; the annual number varied from 2 to 12 (Fig. 1). Since 2005 a decrease trend of the annual number of epidemics has been observed although there were peaks in 2006 and in 2009. This indicates for a lack of tendency for a steady decrease (KURDOVA *et al.* 2006, KURDOVA *et al.* 2010, KURDOVA *et al.* 2011a, KURDOVA *et al.* 2011b).

In the past 10 years (2002-2011) 2895 people consumed infected meat or meat products, and 1285 of them were with outstanding clinical manifestations (Fig. 2). Till now most of *Trichinella* outbreaks were associated with consumption of pork meat as well as of wild and domestic pigs (Fig. 3). 51% from the outbreaks are due to the consumption of unverified meat from wild boar, 40 % – from domestic pig and in 9% the source is not identified (Fig. 4).

The aim of the present report was to monitor

the development of *Trichinella* outbreak in the town of Elin Pelin in 2011 and to review certain epidemiological aspects of trichinellosis.

Materials and Methods

Materials

Cards for epidemiological investigation of *Trichinella* case, including: passport Part onset of symptoms, place of hospitalization, parasitological studies, clinical symptoms, treatment, source of infection.

Records of the examinations of infected meat products conducted by NDSRVI – Sofia

Methods

To confirmation the cases are used the following serological methods:

Indirect haemagglutination (IHA) – Bul Bio NCIPD Ltd., Bulgaria;

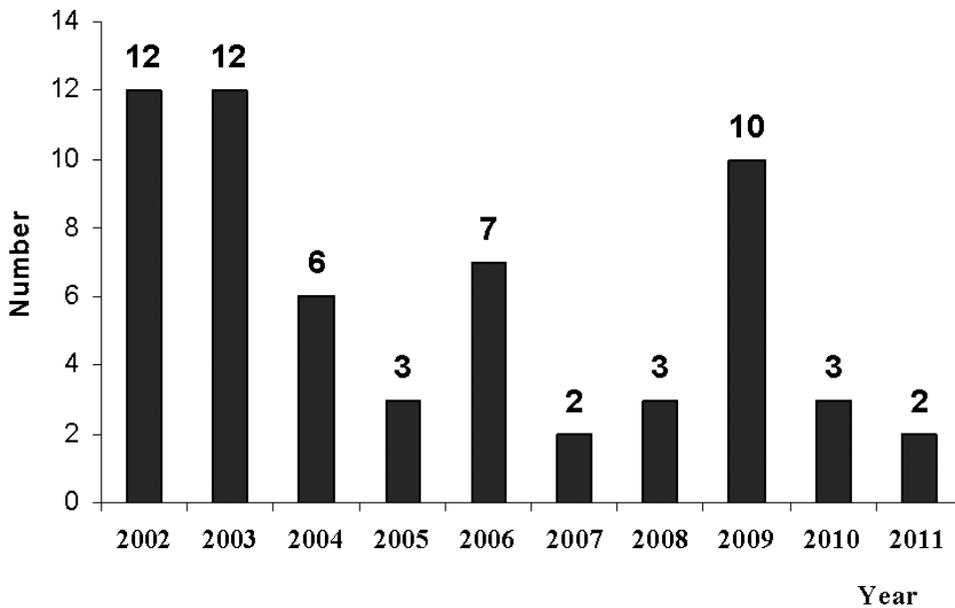


Fig. 1. Human trichinellosis outbreaks in Bulgaria (2002-2011).

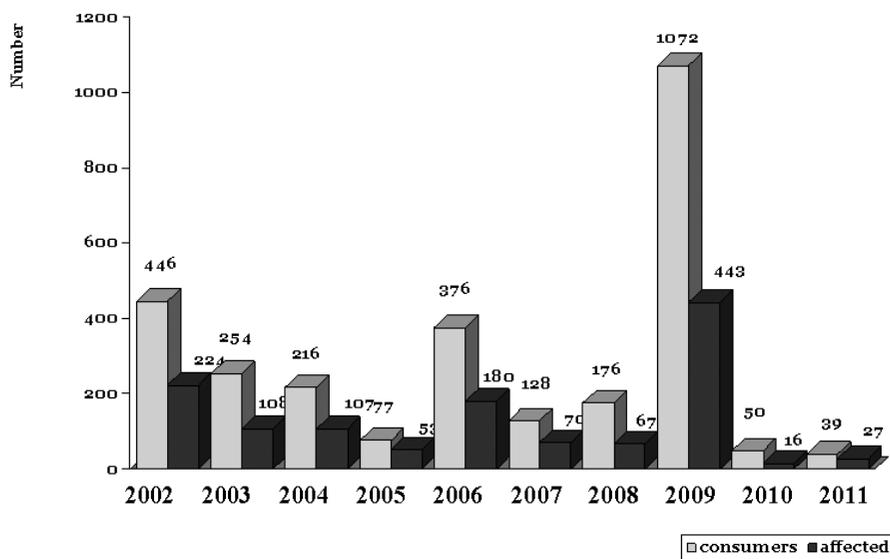


Fig. 2. Total number of persons consuming trichinella meat and clinical cases for 10 years (2002-2011).

Enzyme linked immunosorbent assay (ELISA) – r-Biopharm, Germany.

Both assays were performed according to the instructions of the manufacturer.

Results

In 2011 in Elin Pelin city an outbreak of human trichinellosis was registered caused by minced meat and sausages prepared from domestic pig and horse. The study of these products in NDSRVI –

Sofia showed that they are infected with *Trichinella* larvae.

According to the Regulation No. 21/2005 laying down detailed rules for registration, notification and reporting of infectious diseases, the incidence of trichinellosis can be classified as probable – for persons meeting the clinical criteria and existing epidemiological link and confirmed – in persons meeting the clinical and laboratory criteria. Clinical and laboratory criteria included in the regulation are: fever, myalgia, facial oedema, diarrhea, eosinophilia,

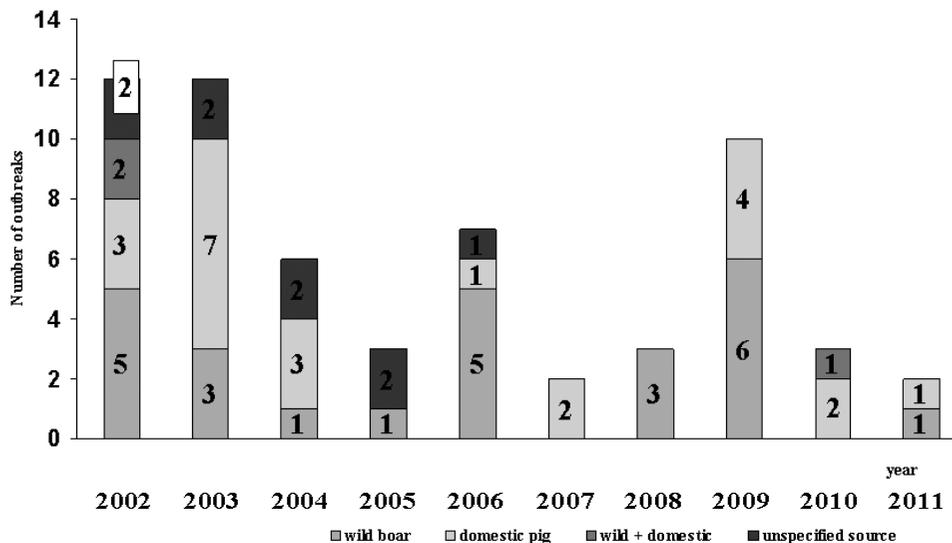


Fig. 3. *Trichinella* outbreaks according to the source of infection (2002-2011).

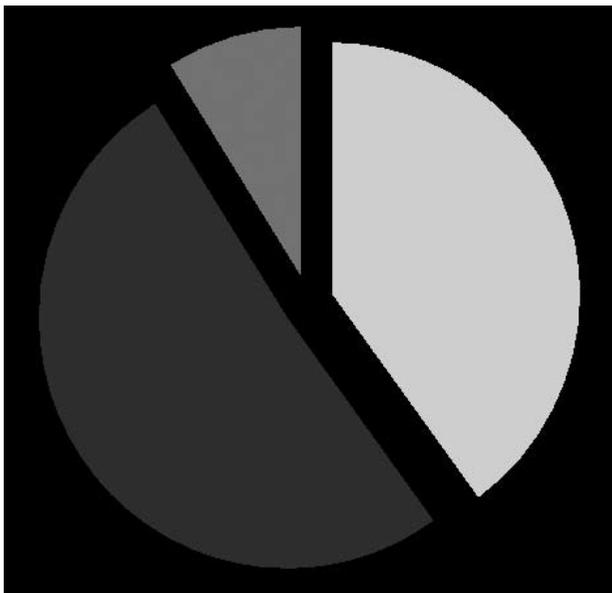


Fig. 4. Source of infection of human trichinellosis outbreaks (2002-2011).

subconjunctival hemorrhage, proving of larvae of *T. spiralis* in tissue obtained by muscle biopsy and existence of specific antibodies against *Trichinella*.

From all registered, 36 people, 12 were without clinical symptoms, 24 – with prominent clinical manifestation such as fever over 38 °C, myalgia over the entire body or just in the feet, swelling of eyelids, diarrhea, stiff jaw, headache (Fig. 5). Analysis of the filled cards for epidemiological study of the trichinellosis case showed that 23 patients with clinical symptoms had a positive result from serological testing in ELISA or IHA. From paraclinical tests 15

patients were with high eosinophilia from 10 % to 50%. 16 patients were hospitalized because of the severe course of the disease. The study of *Trichinella* outbreak in Elin Pelin reveals the existence of specific clinical criteria, positive laboratory tests for *Trichinella* and epidemiological link – consumption of infected meat products. Therefore, all cases can be classified as probable and confirmed.

Mince meat, prepared from horse and pork, has been investigated by digestion of artificial gastric juice and the existence of *Trichinella* larvae was established. *Trichinella* species identification was carried out in Istituto Superiore di Sanità, Rome, Italy where the type of *Trichinella* larvae was identified as *Trichinella spiralis*. Unfortunately, the meat products were not investigated separately from both animals before being cooked. The horse was purchased from the village of Petrich, Municipality Zlatitsa and the pig from the village of Dolni Bogrov, Municipality of Sofia – city. The source of infection can not accurately be determined: pig, horse or both animals. In Bulgaria there are no evidence of spread of trichinellosis among horses so far. All *Trichinella* outbreaks were associated with consumption of pork, both wild and domestic pigs.

Trichinella outbreaks due to the consumption of infected horse meat have been described in France and Italy since 1975 (HAEGHEBAERT *et al.* 1998). The recording of such outbreaks is most often associated with the import in those countries of horse meat from Serbia, but cases have been reported from Croatia

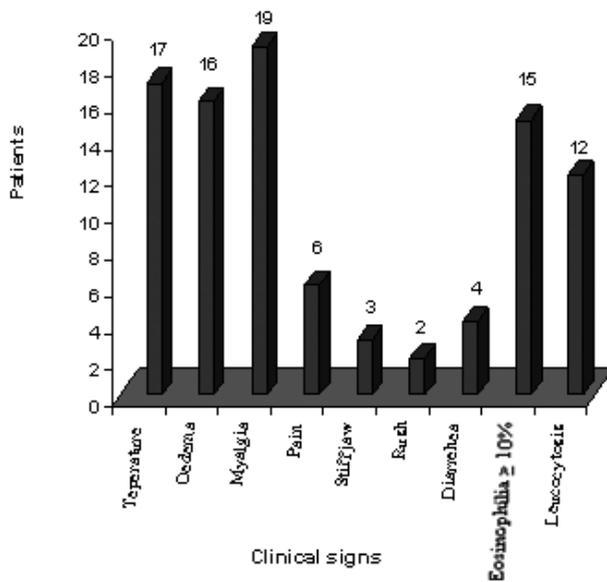


Fig. 5. Clinical and paraclinical signs established in patients from the outbreak.

(1998) and Poland (2009) also (MURRELL *et al.* 2004, LICARDI *et al.* 2009). Many farmers and owners of horses feed them with meat food waste to keep horses in good shape before selling on the market.

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Furthermore, in poor nutritional conditions, horses can consume meat. In our country a *Trichinella* outbreak involving horses was described for the first time. Because of the frequent detection of infected horse meat in Serbia, it is advisable the veterinary authorities in the country to monitor the feeding of horses, as required for the pigs according to EU regulations. When preparing meat products from different animals, they must be individually examined in order to determine the source of infection more accurately.

Conclusions

The results of the epidemiological, parasitological and veterinary investigations indicated that the described *Trichinella* outbreak was linked to the consumption of mixed pork and horse meat from domestic animals. The source of infection could not accurately be determined since the animals were not investigated before preparation of the meat products. The reported cases of equine trichinellosis in Serbia suggested that horses in our country should be tested in order to determine *Trichinella* infection.