



Re-emergence of trichinellosis in southeastern Europe due to political and economic changes

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Abstract

The countries of southeastern Europe including the Balkan region and bordering countries – Albania, Bulgaria, Bosnia and Herzegovina, Croatia, Greece, Hungary, Macedonia, Romania, Serbia and Montenegro, Slovenia, and the European part of Turkey – occupy a very important strategic position and represent a land bridge between Europe and Asia. In the majority of southeastern European countries, cases of trichinellosis among the human and animal populations were described in the late 19th or early 20th centuries. *Trichinella* infections among wildlife were also described in the aforementioned countries. Today, the prevalence of trichinellosis is different between the Balkans and bordering countries. A high prevalence of trichinellosis in domestic animals and humans has been reported in Bulgaria, Serbia and Montenegro, Romania and Croatia. A moderate prevalence was found in Bosnia and Herzegovina. In Hungary, human trichinellosis has not been present for a long period of time. However, sporadic cases were recorded in swine over the last 2 years. Trichinellosis has not been found among domestic animals and humans in Greece and Macedonia in recent years while in Turkey and Slovenia human trichinellosis is sporadic. The re-emergence of trichinellosis is connected with the changes in the social and political systems in Bulgaria and Romania. In Serbia and Montenegro as well in Croatia, however, a re-emergence of trichinellosis was due not only to political and social changes but also to wars that took place in these countries during the last years of the 20th century. Social, economic and political factors responsible for the re-emergence of trichinellosis in southeast European countries are discussed in this communication. © 2005 Elsevier B.V. All rights reserved.

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1. Introduction

Social turbulence caused by war (local, civil or total), revolution, or any transition from one social–political system to another, has been followed throughout history by endemics or pandemics of

different infections among human and/or animals (i.e., plague, cholera, Q-fever, Spanish flu). Outbreaks of various infections have been notorious in southeastern Europe, a region that has been a “hot-spot” of major social turbulence. To our knowledge, however, a relationship between social turbulence and the re-emergence of human and animal trichinellosis has not been described.

Trichinellosis has been recognized as both a public health and economic problem in southeastern Eur-

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opean countries for more than a century. Because it is an important zoonotic infection, considerable efforts have been made to eliminate the parasite from the food chain but with only partial success. In this communication we describe the re-emergence of trichinellosis in southeastern Europe in connection with a transition from communism to capitalism and with civil wars that took place in several of the countries in the region during the last decade of the 20th century. As the political, social and economical situation of southeastern European countries differs significantly they are considered separately and the re-emergence of trichinellosis is described only in countries where the infection existed before these major social events took place.

2. Status and re-emergence of *Trichinella* and trichinellosis

2.1. Romania

Romania is the largest southeast European country with approximately 23 million human inhabitants. The first case of human trichinellosis was diagnosed in 1866 and in the same year trichinellosis was found in a pig. From these first diagnoses, new cases of trichinellosis have been registered in man, pigs, dogs, cats, rats and wildlife every year. In addition to *Trichinella spiralis* other reported species include *T. britovi*, *T. pseudospiralis* and *T. nativa* (Olteanu, 1996).

In Romania, unlike other former socialistic countries, referred to as “eastern European countries”, big industrial farms did not contribute to the eradication of trichinellosis among swine. On the contrary, industrial farms were the source of *Trichinella* from which the parasite spread to small holdings. Economic crises, followed by a shortage of animal food, deficiency of essential nutrients, the appearance of cannibalism, a spread of rats on farms, the absence of proper veterinary and sanitary measures and other difficulties caused these farms to become the main source of *Trichinella* in the country. For example, during the period 1963–1968 human trichinellosis averaged 79.7 cases per year, while during the period 1969–1986, 250–400 cases were reported each year.

Political and economic crises in Romania during the 1980's provoked an increased number of cases of trichinellosis – from 217 in 1983 to 825 in 1988, 2147 in 1992 and 3649 in 1993 (Olteanu, 1996). The incidence of trichinellosis among swine was also high during this period. For example, the percentage of infected swine was 0.12% in 1992, 0.16% in 1993, and 0.15% in 1999 (Olteanu, 2001). The number of swine slaughtered at slaughterhouses at that time in Romania was approximately 6.5 million per year. According to a statement from the Romanian Veterinary Service, no human was infected after consumption of pork subjected to veterinary inspection and, by law, all pigs slaughtered at slaughterhouses or anywhere else had to be inspected by veterinarians. From such a statement one could conclude that Romania did not apply proper legislation.

After a revolution in Romania in 1990 and as a result of a change in social, economic and political systems (a transition from communism to capitalism) and a market economy, the level of human trichinellosis and the prevalence of *Trichinella* infection in pigs is very slowly returning to a sustainable level. For example, the human health service reported 624 cases of trichinellosis in 2000, 624 cases in 2001, 281 cases in 2002, and 102 cases in 2003 (V. Ionescu, personal communication). In swine, the number of infected animals detected at slaughterhouses decreased slowly. The prevalence was reported to be 0.15% in 2000, 0.06% in 2001, 0.03% in 2002 and 0.04% in 2003.

The incidence of *Trichinella* infection in dogs, cats and horses in Romania as well as in wild life (wild boars and bears) is significant but due to a lack of detailed information will not be discussed here.

2.2. Serbia

The Republic of Serbia, along with Montenegro, is one of five independent countries formed after the breakup of the former Yugoslavia as a consequence of civil war (1990–1995). The civil war and events following the war had a drastic effect on the incidence of trichinellosis which became one of the most serious foodborne parasitic infections. Before the war, the implementation of mandatory meat inspection (in 1958), an improvement of pig production practices in general and in particular on big state farms, the efficacy of veterinary services and the prosperity of the

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