11th Workshop of National Reference Laboratories for Parasites, 23-24 May 2016, Rome, Italy

TRICHINELLA SPP. INFECTION IN SERBIA IN 2015

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Distribution and prevalence of Trichinella infection in swine in 25 districts of Serbia in 2015

The presence of infection among domestic pigs was observed in 12 districts. Relative high prevalence rate (above 0.05%) was found in two districts - Borski (remains for many years as endemic focus for Trichinella infection) and Pancevi.

For the rest of 10 districts, Trichinella spp. prevalence was detected at lower levels.

The Republic of Serbia is divided into 25 districts (26 excl. Kosovo).

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Table 1. Trichinella infection in pigs in Serbia in 2015

<table>
<thead>
<tr>
<th>Year</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of infected pigs</td>
<td>0.026</td>
<td>0.02</td>
<td>0.014</td>
<td>0.007</td>
<td>0.006</td>
</tr>
<tr>
<td>No of infected pigs</td>
<td>523</td>
<td>299</td>
<td>292</td>
<td>148</td>
<td>133</td>
</tr>
<tr>
<td>No of inspected pigs x 1000</td>
<td>1970</td>
<td>1507</td>
<td>2037</td>
<td>2142</td>
<td>2221</td>
</tr>
</tbody>
</table>

For the last 5 years there were a three fold reduction of the prevalence.

The rate of domestic swine infection in Serbia in 2015 was 0.006%, indicating successful maintaining of low infection prevalence - similar to that achieved in 2014 (0.007%) comparing to the previous years (2013, prevalence 0.014%, which is the level that existed before 1980) (less than 0.005%) (re-emergence of Trichinella infection in Serbia 1990-1999, prevalence up to 0.17%).

Table 2. Distribution and prevalence of Trichinella infection in wild boars (Sus scrofa)

<table>
<thead>
<tr>
<th>Year</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of infected wild boars</td>
<td>2.32</td>
<td>2.62</td>
<td>1.27</td>
<td>0.73</td>
</tr>
<tr>
<td>No of infected wild boars</td>
<td>44</td>
<td>77</td>
<td>61</td>
<td>52</td>
</tr>
<tr>
<td>No of inspected wild boars</td>
<td>1992</td>
<td>3027</td>
<td>4014</td>
<td>7085</td>
</tr>
</tbody>
</table>

Prevalence range: 0.36 - 1.06 %; * 2 out of 2 wild boars found positive.

The number of districts in which the wild boars were hunted and tested for Trichinella larvae presence increased during the time (from 2012 with 10 districts up to 2015 when data were collected from all 25 districts showing nowadays the reliable value of 0.74 % for prevalence of Trichinella infection, registered in 14 districts.

6/10/2016
Annual rate of human trichinellosis in Serbia for the period 2009-2015

From total No of 82 cases, that were reported to Institute of public health - Batut in 2015. Sera from 34 patients were analyzed at INEP.

Incidence of human trichinellosis in Serbia for the period 2004-2015

Human Trichinellosis in 2015
Distribution and incidence in affected districts

8 outbreaks were registered in 5 districts

No of cases / outbreak | Incidence
--- | ---
West Backa | 13.75
South Banat | 9.7
Belgrade | 0.2
Macva | 3.8
Branicevo | 3.9

The main source: pork meat/sausage (62.5%), smoked pork meat products (25.0%) wild boar meat (12.5%)
Seasonality – January and February

Human Trichinellosis in 2016
Distribution and incidence in affected districts

5 outbreaks have been reported so far, 4 districts
Total of 132 patients.

Outbreak

District name: Number of Outbreaks
- West Backa | 1
- Zlatibor | 2
- South Banat | 1
- Central Banat | 1
At the beginning of 2016 Serbian National Reference Laboratory for Trichinellosis (NRLT) was involved in detection of specific antibodies in human sera originating from 2 outbreaks (January and February 2015, districts: West Backa and Zlatibor).

**West Backa outbreak**

Outbreak in West Backa was caused by pork sausages and smoked ribs originating from the event “Bezdan’s Pork Products Fair” at the end of November 2015 organized by the Tourist Association “Weekend” from the town Bezdan, which was not reported to the Veterinary inspection. 15 persons were suspected on infection, out of which 10 were diagnosed as trichinellosis (confirmed by serodiagnosis at NRLP and treated ambulatory or hospitalized (6 patients). (The investigation is still underway and details are not available).

**Zlatibor District Outbreak**

The Zlatibor District is a district in the western part of Serbia, named after the mountain region of Zlatibor. Cajetina is a town (3,342 inhabitants) and municipality (population 14,745) residing in the Zlatibor District. This municipality covers the most of the Mountin Zlatibor area.

Infected persons consumed dried meat of two wild boars (total weight 100 kg), caught on November 29, 2015 in the village of Lubosa on Zlatibor mountain.

Samples of meat were analyzed at private veterinary clinic in Cajetina and found not contaminated with Trichinella.

Hunters of the Hunters’ Association prepared dried sausages and ham and on December 21st meat products - 10 kg in 20 packages were divided among relatives and friends. It turned out later, according to their statement, that they added to sausages a “little amount of deer meat from the freezer and fat originating from domestic pigs.”

When the very first symptoms of trichinellosis appeared in mid-January 2016, dried meat was inspected again, but this time at the Veterinary Station in another town - Mačkat, where the presence of Trichinella was recognized. The whole case has been taken to the court, the investigation is still underway and the details are not available.

### Outbreak in Cajetina

The meat products were consumed during the period December 21, 2015 - January 7, 2016 by app 300 people (family members, guests from India, Slovenia, Senta, Novi Sad...). Public Health Institute Užice announced that 273 persons were suspected on infection, out of which 114 were diagnosed as trichinellosis.

Most of them were treated ambulatory while 19 (14 adults and 5 kids) were successively hospitalized over time of the outbreak duration (January 22 – March 04, 2016). No deaths occurred.

#### Epidemiological Investigation

<table>
<thead>
<tr>
<th>Sex and age distribution</th>
<th>6-10 years</th>
<th>11-14 years</th>
<th>15-19 years</th>
<th>20-29 years</th>
<th>30-39 years</th>
<th>40-49 years</th>
<th>50-59 years</th>
<th>60-69 years</th>
<th>70-79 years</th>
<th>80 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Female</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table. Clinical manifestations for 19 patients hospitalized for trichinellosis in municipality Cajetina, district Zlatibor
Acknowledgement

- Petrovic M., Ivanovic Z, Veterinary Directorate, Serbian Ministry of Agriculture and Environmental Protection, Belgrade, Serbia.
- Dimitrijevic D, Milinkovic M. Department for Control and Prevention of Communicable Diseases, Institute of Public Health of Serbia "Milan Jovanovic Batut", Belgrade, Serbia
- Vasilev S., Radovic I, Cveticovic I., Ilic N, Gruden–Movsesijan A., Devic M., Milosavljevic B. Milosavljevic J. Department for immunology and immunoparasitology, Institute for the Application of Nuclear Energy - INEP, University of Belgrade, Belgrade, Serbia

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