A trichinellosis outbreak in Borikhamxay Province, Lao PDR

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Summary  Trichinellosis is documented in Southeast Asia, particularly in Thailand and China. Data from Lao PDR are lacking. An outbreak investigation was conducted in Borikhamxay Province after three patients with suspected trichinellosis consulted the Mahosot Hospital, Vientiane. In total, 22 trichinellosis cases were identified; 21 cases could be confirmed by Western blot. High fever (100%), muscle pain (91%), upper eyelid oedema (86%) and diarrhoea (59%) were observed. Among the 22 patients, 86% had consumed pork meat from the same source. This is the first report of an outbreak investigation in Lao PDR since 1975. It shows that the incidence of trichinellosis is much higher than currently thought.

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1. Introduction

Trichinellosis has been documented in Southeast Asia, especially in Thailand and China (Dupouy-Camet, 2000; Khamboonruang, 1991). It is caused mainly by eating raw or undercooked pork that contains the larval stage of the nematode Trichinella spp. (Bruschi and Murrell, 2002; Dupouy-Camet, 2000; Jongwutiwes et al., 1998). In Asia, Trichinella spiralis, T. nativa, T. pseudospiralis and T. papuae have been described (Takahashi et al., 2000). Larvae are released from meat in the human intestine and enter the epithelium where they mature into adult worms. Released larvae then disseminate to skeletal striated muscle tissue (Murrell and Bruschi, 1994), which triggers intense allergic and inflammatory reactions resulting in the disease (Bruschi and Murrell, 2002; Dupouy-Camet, 2000).
On Lao’s New Year festival (‘Pi-Mai Lao’) (April 2004), three patients with suspected trichinellosis were admitted to Mahosot Hospital, Vientiane. All came from Sivilay village (Paksane District, Borikhamxay Province) and were aware of others with similar symptoms in their village (Figure 1). An outbreak investigation was conducted on the clinical manifestations and timing, extent and source of infection.

2. Materials and methods

All inpatients and outpatients with acute fever who visited the provincial hospital during the outbreak period with at least one of the following symptoms were enrolled as ‘suspected cases’ and visited at home: (i) facial oedema; (ii) upper eyelid oedema; and (iii) severe muscle pain or swelling.

Meat intake details (timing, type, origin, type of meal, quantity consumed), number of people sharing meals, clinical manifestations and socioeconomic conditions were recorded. A serum sample was collected on filter paper and serological confirmation was performed by Western blot based on a crude extract of *T. spiralis*. The 43kDa, 44kDa and 64kDa bands were shown to have 100% sensitivity and 98.5% specificity (Yera et al., 2003).

All patients gave informed oral consent before being included in the study. Data were processed using Epidata (www.epidata.dk, Odense, Denmark) and STATA (Stata Corp., College Station, TX, USA).

3. Results

Twenty-two suspected cases from the villages Sivilay (n = 15), Hongxay (n = 6) and Phonxay (n = 1) were identified from 5—8 May 2004, of whom 21 were confirmed serologically by Western blot (Figure 2). The median age was 34 years (range, 5—69 years) and 54.5% were women.

Intense muscle pain was present in 91%, upper eyelid oedema in 86%, diarrhoea in 59%, photophobia in 41%, orbital pain in 14% and abdominal cramps in 9% of the patients (Table 1). The mean duration of illness was 10.5 days (range, 2—21 days).

Inpatient treatment at Mahosot Hospital (three patients) included albendazole 800 mg/day for 3 weeks plus prednisolone 0.5—1 mg/kg/day with progressive dose reduction over 2—3 weeks. Outpatients were given the same drug combination (dosage and duration not available). No cardiac or neurological complications or deaths were reported, although fever and facial swelling exacerbation...
Trichinellosis outbreak in central Lao PDR

Table 1 Characteristics and clinical data of the 22 patients

<table>
<thead>
<tr>
<th>Variables</th>
<th>Characteristics</th>
<th>Clinical manifestations, n (%)</th>
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<tbody>
<tr>
<td>Age (years)</td>
<td>Median 34</td>
<td>Fever 22 (100.0)</td>
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<td></td>
<td>Range 5—69</td>
<td>Severe muscle pain 20 (90.9)</td>
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<td></td>
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<td>Upper eyelid oedema 19 (86.4)</td>
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<td></td>
<td></td>
<td>Diarrhoea 13 (59.1)</td>
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<td></td>
<td></td>
<td>Photophobia 9 (40.9)</td>
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<td></td>
<td></td>
<td>Orbital pain 3 (13.6)</td>
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<td></td>
<td></td>
<td>Abdominal cramp 2 (9.1)</td>
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<tr>
<td>Sex, n (%) Male</td>
<td>10 (45.5)</td>
<td>Upper eyelid oedema 2 (9.1)</td>
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<tr>
<td></td>
<td>Female 12 (54.5)</td>
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<tr>
<td>Duration of illness (days) Mean 10.5</td>
<td>Abdominal cramp 2 (9.1)</td>
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<tr>
<td></td>
<td>Range 2—21</td>
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<tr>
<td>Onset of symptoms</td>
<td>5—9 April 2004</td>
<td>Diarrhoea 13 (59.1)</td>
</tr>
<tr>
<td></td>
<td>10—15 April 2004</td>
<td>Abdominal cramp 2 (9.1)</td>
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<tr>
<td></td>
<td>16—22 April 2004</td>
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</table>

The onset of disease occurred between 5 April and 22 April 2004 (peak 15 April; 6 of 22 cases), corresponding to the period of the Lao New Year festival (‘Pi-Mai Lao’). A pig sold on the Paksane market was suspected as being the source of infection. Among the 22 patients, consumption of a pork meal was reported in 19 (86%): 7 and 12 patients, respectively, ate uncooked ‘Lap-Mou’ (minced pork and mint) and uncooked ‘Som-Mou’ (fermented pork meat) during traditional festival meals. The mean (±SD) period of incubation was 7.8 ± 4.8 days.

4. Discussion

This is the first outbreak reported from the Lao PDR for 30 years since Sicard et al. (1976) reported an outbreak in Vientiane in 1975.

Trichinellosis is a cosmopolite foodborne zoonosis present in raw meat; cooking and freezing kills the larvae (Bruschi and Murrell, 2002). In China, 500 outbreaks involving more than 25 000 people and 240 deaths have been reported in the past 30 years (Liu and Boireau, 2002). During the same period in Thailand, 122 outbreaks, 6700 patients and 97 deaths were reported (Takahashi et al., 2000). Thai authors have emphasised that epidemics may be overlooked (Khamboonruang, 1991). Foci have also recently been described in Viet Nam (De et al., 2001).

Trichinellosis can be a serious illness and measures are needed to improve all aspects of case detection and management as well as prevention (Dupouy-Camet et al., 2002; Watt and Silachamroon, 2004). This is particularly true for Lao PDR where this outbreak has shown that the incidence of trichinellosis is much higher than currently thought.

Conflicts of interest statement

The authors have no conflicts of interest concerning the work reported in this paper.

Acknowledgements

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References


