A Follow-up Study of *Opisthorchis viverrini* Infection after the 10-year Implementation of Control Program in Baan Nayao, Chachoengsao, Central Thailand

5th Year Medical Student

12 December 2013
OV infection in Thailand
Introduction

OV infection \rightarrow Cholangiocarcinoma

Prevention and control

- Case diagnosis and treatment
- Health education and promotion for consumption of cooked fish
- Promotion of using toilet

In 2002
Incidence rate: 21.6/100 person-years
Prevalence: 21.3% (Rangsin, 2009)

In 2007
Incidence: 21.4/100 person-years
Prevalence: 18.6% (Suwanhitathorn, 2013)
Prevalence of OV infection in Baan Nayao during 2002-2011

Prevalance

Year

2002 2007 2011

Rangsin, 2009 Suwanhitathorn, 2013 Our study

21.3% 18.6% 6.2%
Incidence rate of OV infection in Baan Nayao during 2004-2009

- 2004: 21.6 per 100 person-year
- 2009: 21.4 per 100 person-year
- 2013: ?

References:
- Rangsin, 2009
- Suwanhitathorn, 2013
- Our study
Objective

- To determine the incidence and risk factors of OV infection in Moo 15, Baan NaYao, Chachoengsao, 2011 after 10 years follow up
Materials and Methods

- **Study design:** Mixed method study
  - Quantitative study
  - Qualitative study

- **Population:** Villagers who were received negative finding of OV egg in stool specimen with a microscope, in 2011.
Quantitative study

September 2011

Negative case for OV infection 974 case

Loss to follow up due to...
1. Moved out (292) 29.9 %
2. Dead (3) 0.4 %
3. Unable to contact (187) 19.2 %
Total (482) 49.5 %

3 death cases died from...
2 cases cancer
1 case missing

Stool examination
- Direct simple smear
- Kato thick technique
- Concentration technique

Negative case 492 case
Response rate 50.5 %

Questionnaire
- Demographic data
- Health behavior and OV infection
Qualitative study

Age groups
- Secondary school
- 20-29 years old
- 30-49 years old
- 50-59 years old
- > 60 years old

Characteristic
Perceptions of transmission
Awareness
Perceptions of treatment and prevention
Perceptions of health education and promotion

Recorded information
Text
Sorting & Coding
Content analysis (Grounded Theory)
QUANTITATIVE RESULTS
Demographic data (N = 492)

- Male 46%
- Primary school 66.7%
- Agriculture 63.7%
- Age range 1-85 years old
  - Mean 47.4 ± 18.9 years old
Incidence rate of OV infection in Baan Nayao during 2004-2013 per 100 person-year

- 2004: 21.6
- 2009: 21.4
- 2013: 7.05

Year:
- 2004: Rangsin, 2009
- 2009: Suwanhitathorn, 2013
- 2013: Our study
Factors associated OV infection among Baan Nayao villagers

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No. infected</th>
<th>Person-years of follow-up</th>
<th>IR /100 person-years</th>
<th>Crude IRR (95% CI)</th>
<th>P</th>
<th>Adjusted IRR (95% CI)</th>
<th>P</th>
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<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Female</td>
<td>19</td>
<td>238.8</td>
<td>7.9</td>
<td>1</td>
<td></td>
<td>1.2 (0.7-2.4)</td>
<td>0.420</td>
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<tr>
<td>Male</td>
<td>21</td>
<td>205.0</td>
<td>10.2</td>
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<td><strong>Age group (yrs.)</strong></td>
<td></td>
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<tr>
<td>0-19</td>
<td>4</td>
<td>55.0</td>
<td>7.2</td>
<td>1</td>
<td></td>
<td>0.3 (0.3-2.4)</td>
<td>0.240</td>
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<tr>
<td>20-39</td>
<td>1</td>
<td>52.3</td>
<td>2.0</td>
<td></td>
<td></td>
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<tr>
<td>40-59</td>
<td>1</td>
<td>11</td>
<td>52.3</td>
<td></td>
<td></td>
<td>1.3 (0.4-4.3)</td>
<td>0.600</td>
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<tr>
<td>≥60</td>
<td>2</td>
<td>11</td>
<td>49.0</td>
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<td><strong>Educational level</strong></td>
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<td>Higher than primary school</td>
<td>3</td>
<td>86.6</td>
<td>7.8</td>
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<td>Primary school or below</td>
<td>39</td>
<td>377.5</td>
<td>9.0</td>
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<tr>
<td><strong>Family income (Thai Baht/year)</strong></td>
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<td>&gt;40000</td>
<td>10</td>
<td>143.5</td>
<td>7.0</td>
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<td>0-40000</td>
<td>28</td>
<td>207.5</td>
<td>13.5</td>
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<td><strong>Fish menus</strong></td>
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<td></td>
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<tr>
<td>Chopped raw fish salad (Koipla)</td>
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<td>No</td>
<td>12</td>
<td>235.0</td>
<td>5.1</td>
<td>1</td>
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<td>2.6 (1.4-5.1)</td>
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<tr>
<td>Yes</td>
<td>28</td>
<td>207.5</td>
<td>13.5</td>
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<td>2.4 (1.1-4.9)</td>
<td>0.02</td>
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<td>Raw fermented fish (Pla ra)</td>
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<td></td>
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<tr>
<td>No</td>
<td>12</td>
<td>140.0</td>
<td>8.6</td>
<td>1</td>
<td></td>
<td>1.0 (0.5-2.1)</td>
<td>0.920</td>
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<tr>
<td>Yes</td>
<td>27</td>
<td>301.3</td>
<td>9.0</td>
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</tbody>
</table>
QUALITATIVE RESULTS
**Reduced raw fish consumption**

“**They(young generation) never eat raw fish, they are used to eat fried fish**, **raw fish is not common in their diet.**

“I know that eating raw fish such as Koi-pla and Larb pla can cause OV infection.”

<table>
<thead>
<tr>
<th>Part</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>Situation of Raw Fish Consumption</td>
<td>- New generation did not eat raw fish.</td>
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<td></td>
<td>- PCM’s health promotion.</td>
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<tr>
<td></td>
<td>- Awareness of infection.</td>
</tr>
<tr>
<td>Perception of Transmission</td>
<td>- Most villagers known how OV was transmitted.</td>
</tr>
<tr>
<td>Awareness of Infection</td>
<td>- Most villagers were aware of OV infection, except male and aged &gt; 60 yr.</td>
</tr>
<tr>
<td>Perception of Treatment and Prevention</td>
<td>- Most villagers knew symptoms and complication of OV infection.</td>
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<td></td>
<td>- Positive stool result increased villagers’ awareness.</td>
</tr>
<tr>
<td>Perception of Health Education and Promotion</td>
<td>- Health education and promotion were from PCM.</td>
</tr>
</tbody>
</table>

“**Fresh water fish(Cyprinoid fish) has parasites but I have never seen it before.** And after receiving the treatment from Phramongkutklao’s doctor I do not eat Koi-Pla again.”

“We used to see the parasites from doctor, then we were afraid to eat it.”
Discussion

- Reduction of incidence of OV infection
  - Health education
  - Promotion for consumption of cooked fish
  - Promotion of using toilet
- Awareness in health risk from eating koi-pla
- New generation preferred cooked food
- Raw fish consumption is an important risk factor for OV infection
Conclusion

- Incidence of OV infection decreased
  - Phramongkutklao’s health promotion
  - Health education
  - Repeated stool examination

- Further action
  - OV knowledge for students and villagers
Recommendation

- Implementation
  - Ministry of Public Health
    - Standard knowledge of OV infection to basic education especially in Northeast and North.

- Targeted strategy is preferred

- So we should provide...
  - Education
  - Health promotion
Acknowledgements

- Department of Military and Community Medicine
- Department of Parasitology
- Phramongkutklao Research Fund
- Head of Baan Nayao village
- All participants