Diagnosis of Taeniasis and Cysticercosis in China

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Epidemiology

1. Taeniasis

In 34 provinces:

- *T. solium* (23 provinces)
- *T. saginata* (19 provinces)
- *T. asiatica* (5 provinces)
- Both *T. solium* and *T. saginata*:
  11 province co-endemic

Overall, 33 recorded *Taenia spp.*

(Except Macao)
2. Cysticercosis

• **Retrospective survey in 1\textsuperscript{st} National Survey on Parasitic Diseases**
  16 508 cases
  In 671 counties, 29 provinces
  other 4 provinces also reported cases except Macao

**Overall, 33 provinces report cysticercosis case**

• **Serology survey in 2\textsuperscript{nd} National Survey on Parasitic Diseases**
  Sampling: 96 008 in 31 provinces
  Positive: 553 in 25 provinces
  **Serological positive rate: 0.58%**
  **Serological testing is not as good as etiology.**
3. Epidemiological profiles

3.1 Taeniasis

1st national survey:
Sex:
Male: 0.16% (1185/733143);
Female: 0.17% (1264/744599) (p=0.225)
Age: Increasing with age

3.2 Cysticercosis

Retrospective survey:
Sex (13 560 cases):
Highest proportion in middle ages

2nd national survey (serology):
Sex:
Male: 0.55% (252/45867);
Female: 0.60% (301/50142) (p=0.298)
Age:
Highest positive rate in middle ages
The 3rd national survey

- Undergoing, begin from 2014, 31 provinces, 500,000 samples
- now field work was finished, and then set up database, input, check and analysis datas
- Until now there are no definitive datas to share in this meeting
- But we can draw a conclusion the prevalences of T. and C. are dropped sharply with the development of society and carrying out the control policies.
Diagnosis

1. Taeniasis

➢ Traditional techniques:

• **Fecal examination:** eggs or proglottids, standard method, but low sensitivity (national surveys, combined with other intestinal helminth detection)

• **Anal swap:** more sensitive than fecal examination

• **History of expelling proglottids:** convenient in field, massive screening (1970s-1990s)
New techniques: species differentiation

- multiplex-PCR of fecal samples: only applied in lab
- Copro PCR: only in lab
- LAMP for feces: both in lab and in field
Special methods:

• Chemotherapy to detect worms or proglottids: suspected cases in clinic

• Enteroscope examination: in clinic
National diagnosis standard
Issued by Ministry of Health in 2012

Contents:
3 kind Evidences:
Epidemiology
Clinical manifestations
Etiology

2 group criterion:
Suspected
Definitive
As to etiology, fecal examination for proglottids and eggs, perianal swab technique for eggs and tentative deworming for proglottids and adults are recommended.
2. Cysticercosis

- Immunology (serum, cerebrospinal fluid):
  Assistant diagnosis
  Cross reaction to others especially echinococcosis

**Targets:**
  circulating antibody, circulating antigen

**Methods:**
  IHA, ELISA, Dot-ELISA, EITB, Others
• **Imaging:** **CT**: since early 1980s, **MRI**: since 1990

  poor accessibility

• **Pathologic histology:** Gold standard

  used for muscular cysticercosis

  can’t used for cerebral cysticercosis

• **Others:** ultrasound

  used for heart, muscular, eyes
Misdiagnosis: Especially before 1990

  e.g. 20% had been misdiagnosed before admitted into the Treatment Center for Cysticercosis in Shandong in 1973-1990

Misdiagnosed as:

epilepsy unrelated to cysticercosis,
viral encephalitis,
tuberculous meningitis,
perencephaly,
cerebrovascular malformation,
brain tumor,
others
Diagnosis standards of cysticercosis:

✓ Unofficial diagnosis standard suggested by scholars:
  Appeared in 1985, the 1st national seminar of cysticercosis
  Revised in 1996 and 2001

✓ Official diagnosis standard:
  Issued by Ministry of Health in 2012

Contents:

5 kind Evidences:
  Epidemiology history
  Clinical symptoms and signs
  Etiological evidence
  Immunology
  Imaging (CT and MRI)

3 group criterion:
  Suspected
  Clinical
  Definitive
Challenges

Diagnosis:
1. Indifferentiation of cerebral cysticercosis from other cysticercosis in national standard
2. Accessibility in remote areas, especially for cysticercosis

Control:
1. Unavailability of surveillance
No surveillance, not included in report system
2. No special finance for control
Lymphatic Filariasis Elimination in 2006

By 2020, eliminate malaria nationwide

167 BC

When is my turn?

Thanks for your attentions!