بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ
Human sparganosis

*Spirometra mansoni* & *Spirometra proliferum*

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Objectives

1. Overview on sparganosis.
2. Geographical distribution & life cycle of *Spirometra*.
3. Morphology of *Sparganum mansoni* & *Sparganum proliferum*.
4. Mode of infection.
5. Pathogenicity & clinical picture.
6. Diagnosis of sparganosis.
7. Treatment of sparganosis.
8. Prevention and control.
Overview

- **Sparganosis** is a worldwide parasitic infection caused by the plerocercoid of diphyllobothroid of genus *Spirometra*.

- Adults are found in dogs, cats & carnivores.

- Infection is by ingestion of contaminated water, frog or snake tissues, or contact between these tissues & an open wound or mucous membrane.

- Plerocercoid migrate to subcutaneous location, brain, or eyes, etc.
Geographical distribution: *Spirometra mansoni* is worldwide, but most frequently in Far-Est, East Africa and USA.

-The rare *S. proliferum* is found in Japan and Southeast Asia, with at least 3 cases reported in the Americas.
Life cycle: similar to *Diphyllobothrium latum*, but differs in:

- **Definitive host**: dogs, cats and wild carnivores.

- **Intermediate hosts**:
  - 1st I.H.: *Cyclops*.
  - 2nd I.H.: fish, frogs, lizards, snakes, birds, and occasionally man.

- **Man** acts as an accidental 2nd intermediate host in a blind cycle.
HUMAN SPARGANOSIS
(Spirometrosis)

- It is invasion of human tissues by sparganum of *Spirometra mansoni* and/or *S. proliferum*.

**Types of spargana:**

1. **Sparganum mansoni**: is the plerocercoid larva of *Spirometra mansoni*.

   - Solid larva, wrinkled, ribbon shaped, whitish, few mm–several cm (1-50 cm) with invaginated scolex.
A- Sparganum removed from the ocular conjunctiva of a patient from Taiwan. The worm measured 40 mm long.

B- Sparganum removed from the chest wall of a patient. The worm measured 70 mm long.
2- *Sparganum proliferum*: is the plerocercoid larva of *Spirometra proliferum*.

- It multiplies by budding or longitudinal splitting.
- Produces lateral branches that separate forming new larvae.
- It may disseminate to other tissues.
Methods of infection:

1- Drinking water contaminated with infected *Cyclops* containing the procercoid larvae.

-In the intestine, the procercoides are liberated from the *Cyclops*.

-They penetrate the intestinal wall → circulation → different tissues and organs, mainly subcutaneous tissues, eye, muscles and some viscera.
2- Eating of raw or undercooked flesh of the 2nd I.H. containing the *plero cercoid* larvae.

- The *spargana* migrate from tissues → intestinal wall → circulation → different organs.

3- The use of infected flesh of such 2nd I.H. as foments or poultices on the inflamed eye, skin and wounds.

- The *spargana* migrate out of tissues and crawl into the inflamed area causing severe inflammatory reactions.
Pathogenesis and clinical picture:

1-Subcutaneous sparganosis: cyst like, itchy, migratory, slowly growing swelling, about 2 cm, and may be tender.
2-Occular sparganosis: irritation, oedema of eye lids, ptosis, lacrimation, sub-conjunctival cystic nodule.

-Retrobulbar larvae → intensive pain, corneal ulceration & exophthalmos (painful oedematous conjunctivitis).

-If untreated → blindness.
3- **Cerebral sparganosis**: seizures, hemiparesis, headaches and brain abscesses are common symptoms of sparganosis, and **eosinophilia** is a common sign.
4-Budding and splitting of sparganum proliferum: result in formation of multiple spargana & the infected organ becomes honey-combed.

5-Clinical symptoms also vary according to the location of the sparganum:

- Elephantiasis from location in lymph channels.
- Peritonitis from location in intestinal perforation

6- Urticaria, oedema, fever, pain, eosinophilia.

7- Death of larva causes intense local reaction.
Diagnosis:
I-Clinical.
II-Laboratory:
1. Identification of spargana after surgical removal of nodules.
2. ELISA.
4. MRI & CT.
**Treatment:**

- Surgical removal of nodules, containing spargana.
- If surgery is difficult, local injection of 2-4 ml of ethyl alcohol (40%) with procaine to kill the spargana in situ.
Prevention and control:

- Through cooking of flesh of suspected I.H. capable of transmitting the spargana.

- Drinking of filtered or boiled water.

- Avoid the use of infected flesh's tissues as poultices for the inflammed areas of skin, wounds and eyes.

- Control of Cyclops (1st I.H.).
Thank you