

# Ultrasonography of Intraocular Cysticercus

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*Cysticercus cellulosae* is the larval stage of the *Taenia solium*, a large pork tapeworm. Man acquires cysticercosis ingesting water or food (rare or raw pork) contaminated with its eggs.

One can find a cyst in the subconjunctival space or intraocularly where it can remain subretinal or fall into the vitreous cavity through the retina. In the vitreous it can be observed moving freely.

The diagnosis of intraocular involvement depends on the visualization of the cyst with ophthalmoscopy. Sometimes, with ocular media haze, the diagnosis is possible only with ultrasonography.

To characterize the cyst by ultrasonography, four patients were selected, with the diagnosis of intraocular cysticercus performed by ophthalmoscopy.

We used the OCUSCAN-400, contact A and B-mode sector scanner (Sonometrics Systems, Inc.) with a 10 MHz transducer to perform this study.

## CASE REPORTS

**Case 1.** A 48-year-old white woman came complaining of progressive blurring of vision OD that started two months ago. Visual acuity on Feb. 5, 1978 was light perception OD and 20/20 OS. IOP 12 mmHg OD and 14 mmHg OS by applanation. No signs of inflammation in the external eye examination.

Indirect Ophthalmoscopy revealed a dense vitreous membrane in OD, through which a cysticercus was visible presenting spontaneous movements. Normal fundus OS.

### ULTRASONOGRAPHY:

B-Scan revealed a rounded structure, sometimes with a spot of high reflectivity in its interior (fig. 1) and sometimes without it (fig. 2), depending of the sound section that could include the cysticercus scolex or not. This structure presented spontaneous movements and was preceded by a dense membrane of high reflectivity and anterior concavity (figs. 1 and 2)..

A-Scan it was noted a high reflective peak that corresponded to the membrane described in the B-Scan, followed by corres-

ponded to the membrane described in the B-Scan, followed by an anechoic space and many peaks of high reflectivity without slope decay and after them a decay preceding the scleral echoes (fig. 3).

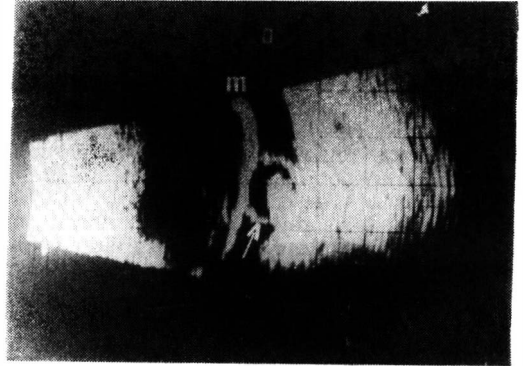


Fig. 1 — (Almada, Hirai, Susanna Jr. and Takahashi). Case 1. B — Scan shows the cysticercus as a rounded structure (arrow) with a high reflective spot in its interior, preceded by a dense vitreous membrane (m).

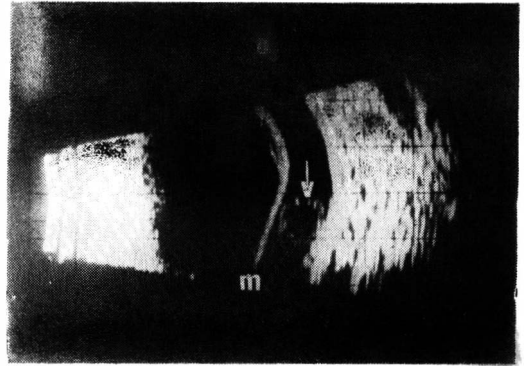


Fig. 2 — (Almada, Hirai, Susanna Jr. and Takahashi). Case 1. B — Scan shows the cysticercus as a rounded structure (arrow) without a high reflective spot in its interior preceded by a dense vitreous membrane (m).

**Case 2.** A 58-year-old white man noted progressive blurring of vision in OD that started three months ago. His visual acuity

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on June 1, 1978 was hand movements at foot OD and 20/20 OS. IOP 11 mmHg OD and 13 mmHg OS by applanation.

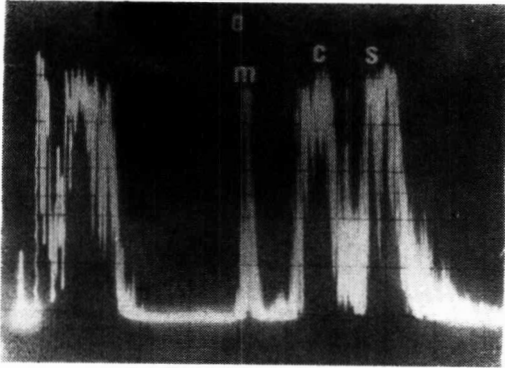


Fig. 3 — (Almada, Hirai, Susanna Jr. and Takahashi). Case 1. A — Scan showing the echoes of the membrane (m), cysticercus (c) and sclera (s).

Indirect Ophthalmoscopy revealed in OD++ of vitreous cloudiness, vitreous bands coming from the posterior pole and no retinal detachment. Despite the media haze, it was possible to visualize a cysticercus moving behind the vitreous membranes. Normal fundus OS.

**ULTRASONOGRAPHY:**

B-Scan — it was observed a spindle-shaped structure with a high reflective spot in its interior and presenting spontaneous movements, preceded by a thick, dense and concave membrane of high reflectivity (fig. 4).

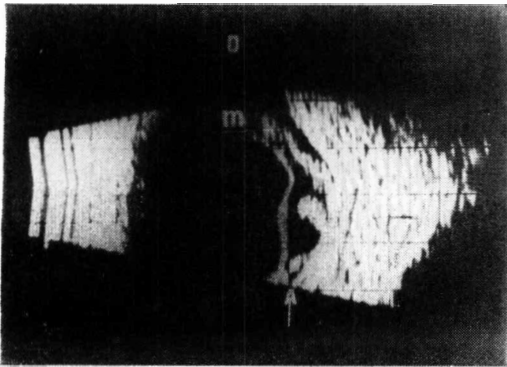


Fig. 4 — (Almada, Hirai, Susanna Jr. and Takahashi). Case 2. B-Scan of a spindle-shaped cysticercus (arrow) with a high reflective spot in its interior, preceded by a dense membrane (m).

A-Scan — it was noted and initial peak corresponding to the thick membrane fol-

lowed by an anechoic space and many high reflective peaks (with 100 % of the height of the scleral wall peak) without slope decay and after them a steep fall preceding the scleral echoes (fig. 5).

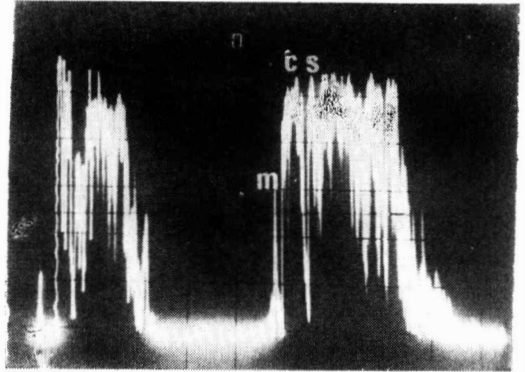


Fig. 5 — (Almada, Hirai, Susanna Jr. and Takahashi). Case 2. A-Scan showing the echoes of the membrane (m), cysticercus (c) and sclera (s).

Case 3. A 30-year-old-white woman came with an eight month history of blurred vision OD. Visual acuity on August 4 1978 was hand movements OD and 20/20 OS. IOP 16 mmHg OU by applanation. No external signs of inflammation.

Indirect Ophthalmoscopy revealed a cysticercus in the vitreous cavity, extremely mobile, moving freely to the posterior pole or coming to the anterior vitreous. In the posterior pole was visible the place of the retina from where it came into the vitreous cavity. Normal fundus OS.

**ULTRASONOGRAPHY:**

B-Scan — revealed a rounded structure with constant change in shape and position in the vitreous cavity, with anterior and posterior surfaces almost parallel and both with high reflectivity (fig. 6).

A-Scan — showed twin high echoes with 100% of the height of the scleral peak, with a thin anechoic space between them, both with variable attenuation to the isoelectric line (varying from 21 to 42 dB) depending on the shape of the parasite (fig. 6 and 7).

Case 4. A 16-year-old girl came complaining of progressive loss of vision OS that began two months earlier. When first examined on October 20, 1978 she had visual acuity of 20/20 OD and light perception OS. IOP 10 mmHg OD and 9 mmHg OS by applanation. No external signs of inflammation.

Indirect Ophthalmoscopy revealed normal fundus OD and a cysticercus in the anterior vitreous OS, with dense vitreous membranes behind it.

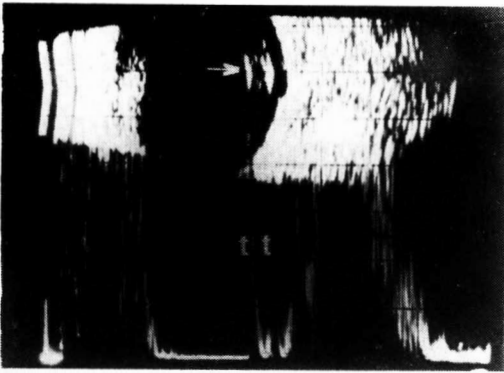


Fig. 6 — (Almada, Hirai, Susanna Jr. and Takahashi). Case 3. Combined A and B-Scan photograph shows in the B-Scan the cysticercus (arrow) with anterior and posterior surfaces almost parallel and in the A-Scan the twin peaks (t).

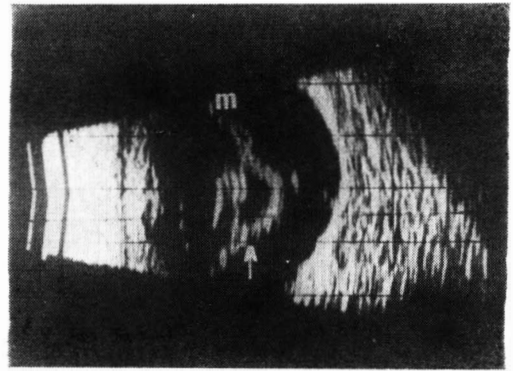


Fig. 8 — (Almada, Hirai, Susanna Jr. and Takahashi). Case 4. B-Scan shows the cysticercus (arrow) and an irregular vitreous membrane (m).

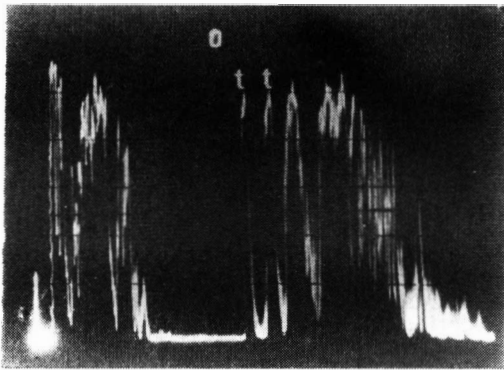


Fig. 7 — (Almada, Hirai, Susanna Jr. and Takahashi). Case 3. A-Scan shows the twin peaks of the cysticercus (t).

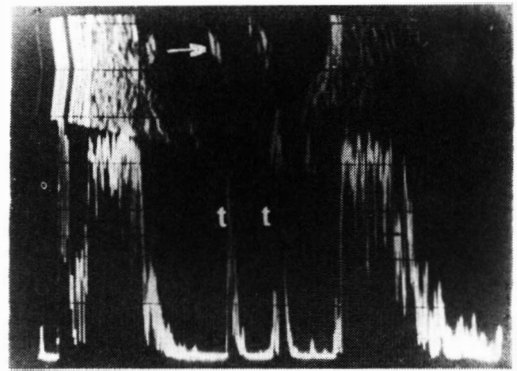


Fig. 9 — (Almada, Hirai, Susanna Jr. and Takahashi). Case 4. Combined A and B-Scan shows the cysticercus (arrow) and the corresponding twin peaks (t).

#### ULTRASONOGRAPHY:

**B-Scan** — it was observed an almost round structure with a high reflective spot in its interior in some incidences, followed by an irregular, thick and with high mobility membrane (fig. 8).

**A-Scan** — twin echoes were observed corresponding to the cystic structure, both with high reflectivity (100% of the height of the scleral wall peak) and many other peaks of poor the reflectivity corresponding to other membranes (fig. 9). Sometimes it was possible to observe a peak of high reflectivity between the twin echoes of the cyst (fig. 10) and this corresponded to the cysticercus scolex that is ultrasonographically observed in the B-Scan as a high reflective spot inside the cyst.

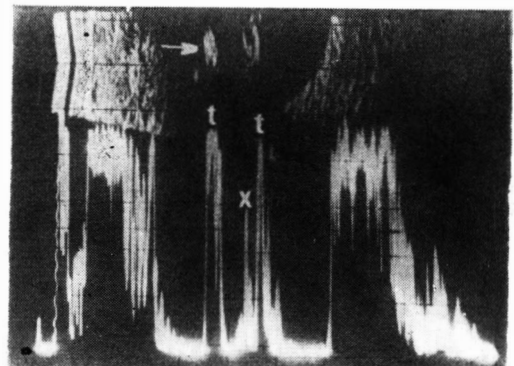


Fig. 10 — (Almada, Hirai, Susanna Jr. and Takahashi). Case 4. Combined A and B-Scan shows the cysticercus (arrow), the corresponding twin peaks (t) and an echo between them representing the cysticercus scolex (x).

## DISCUSSION

Ocular cystercercosis may have several ultrasonographic aspects. Although cysticercus is difficult to diagnose by ultrasonography, it may be suspected when a rounded or spindle shaped structure is observed in the B-Scan, mainly if there is a high reflective spot inside it and spontaneous movements and changes in its shape can be detected.

It is of value to correlate the B-Scan aspects with the A-Scan findings. In some cases the rounded structure visualized in the B-Scan corresponds to twin echoes of high reflectivity in the A-Scan, with or without a group of peaks between them.

It is important to investigate the nutritional habits of these patients, in particular the ingestion of rare or raw pork meat.

## SUMMARY

Four patients with intraocular cysticercosis confirmed by ophthalmoscopy were studied with ultrasonography to show the A-Scan patterns and the B-Scan aspects of this disease.

## RESUMO

Quatro pacientes com cisticercose intraocular confirmada por oftalmoscopia indireta foram estudados por meio da ultrasonografia para demonstrar os padrões de A-Scan e os aspectos de B-Scan que são encontrados nesta doença.