

SHORT COMMUNICATION

An Autochthonous Case of *Echinococcus vogeli* Rausch & Bernstein, 1972 Polycystic Echinococcosis in the State of Rondônia, Brazil

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The present case report refers to a patient from the State of Rondônia, North region of Brazil, attended with clinical suspicion of hepatic echinococcosis. Examination by imaging (ultrasonography and computerized tomography) revealed a conglomerate of cystic lesions, with mobile contents within the cyst. The serology (immunoblot) for Echinococcus sp. was positive (21 and 31 kDa bands). This case is the first reported in Rondônia, suggesting the need to investigate the polycystic echinococcosis in individuals with hepatic cysts from areas of tropical forest and hunting habits where wild life was present as wild dogs, cats and rodents, particularly Agouti paca (paca) and Dasyprocta aguti (agouti).

Key words: polycystic echinococcosis - *Echinococcus vogeli* - human report - Rondônia - Brazil

Polycystic echinococcosis is an emergent zoonosis induced by *Echinococcus vogeli* Rausch & Bernstein, 1972 and *E. oligarthus* (Diesing, 1863) Lühe, 1910 (D'Alessandro 1997, Pawlowski, 1997). In Brazil its intermediate hosts are either *Agouti paca* (Linnaeus, 1766) (= *Cuniculus paca*) commonly named paca or *Dasyprocta aguti* (Linnaeus, 1758) (= *Dasyprocta leporina*), commonly named agouti, "cutia". The finding of cysts of *E. vogeli* in pacas was reported from Sena Madureira, State of Acre (D'Alessandro et al. 1981, Meneghelli et al. 1990), Serra do Navio, State of Amapá (Rausch et al. 1984), while polycystic larvae in the liver and spleen of agoutis from Jacutinga, State of São Paulo (Lutz 1907) and Ilha de Marajó, State of Pará, have been reported (Soares et al. 1999). The polycystic larval form mainly develops in the liver and can destroy the hepatic parenchyma simulating a malignant neoplasia (D'Alessandro et al. 1979).

The bush dog *Speothus venaticus* (Lund, 1842) and the domestic dogs are the only animals reported as natural hosts of *E. vogeli* (D'Alessandro et al. 1996).

As accidental hosts, humans can be infected by the ingestion of eggs of the parasite contaminating either faeces of pet dogs (definitive host) or hunt that previously have ingested paca viscera with polycystic larval forms (Meneghelli et al. 1990, D'Alessandro 1997).

Human echinococcosis is insidious and difficult to diagnose since the presence of the parasite can not be easily detected, if deeply located. As an auxiliary tool for con-

clusive or presumptive diagnosis, laboratory investigation is necessary with immunoserological assays (Craig 1994, Romani 1995).

In this study, we report an autochthonous human case of polycystic echinococcosis due to *E. vogeli* in a patient from the State of Rondônia, North region of Brazil.

The term echinococcosis was adopted in accordance to WHO (1996) and Pawlowski (1997).

Case report - Woman, 48 years old, mulatto, married, born in the State of Maranhão but having migrated out from this area when she was under 5. She was first attended at the Hospital Militar de Porto Velho and afterwards (August 1996) sent to the ambulatory of the Gastroenterology Department in the Santa Casa de Misericórdia (SCM), State of Rio de Janeiro. During her first visit to the SCM, the patient declared to live in the suburban area of Porto Velho, State of Rondônia, and her main complaint was a pain in right hypochondria, that had started two years before. The patient was neither alcohol nor tobacco addict. She reported to be aware of echinococcosis, since one of her sons presented a history of pulmonary echinococcosis. She was accustomed to hunting wild animals and among them, the paca. In Porto Velho, in July 1995, she was submitted to an abdominal ultrasonography, that revealed a cystic structure in the right lobe. Computerized tomography (CT) confirmed a conglomerate of cystic lesions in the liver, indicating a hepatic echinococcosis.

In the SCM, clinical examination of the patient revealed good general conditions, eupnea, absence of jaundice and adenomatosis. Respiratory and circulatory systems were not altered. Under palpation the abdomen was flaccid, painful and with an evident mass formation in the right hypochondria, at 4 cm from the right costal rim in the hemiclavicular line.

The following laboratory tests were performed: complete blood count, blood biochemistry (glucose, urea, creatinine, sodium, potassium), hepatic profile (direct and indirect total bilirubin, aminotransferases, total proteins and

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fractions, alkaline phosphatase), urine and fecal examination, thoracic X-ray. Results of the above referred procedures were in accordance with normal patterns. Viral hepatitis serology was positive with anti-HVA IgG and negative to viral hepatitis B with AgHbs, anti-Hbc, anti-Hbc IgM and anti-Hbs.

Two months later abdominal ultrasonography revealed the enlargement of the square segment of the liver left lobe, inducing a high lateral displacement of the median superior hepatic vein, heterogeneous hepatic texture with multiple surrounding cysts and the presence of a mobile content in the interior of the cyst (Fig. 1a). In CT liver appeared within a normal volume, heterogeneous texture, with multiple cysts with regular margins and with anechogenic structures inside. There was a larger central image 4 cm in diameter and other radiate peripheral in the lateral segment of the left lobe (Fig. 1b).

Serological tests for *Echinococcus* sp. were performed by immunoblot (Western blot) assay with total antigen of lyophilized sheep hydatid cyst fluid (ATLH-O) supplied by the Laboratório de Serologia, Departamento de Parasitologia del Centro de Referência de Laboratórios de Salud Publica, Instituto Nacional de Salud, Peru. Bands with molecular weights of 21 and 31 kDa were observed (Fig. 2).

In 1996, the patient was submitted to an albendazole treatment (400 mg/2x/daily) for three months with no improvement. Then a surgical procedure was decided, with drainage of the entire cavity of the cyst, due to its close connection to the median superior hepatic vein and vena cava. The cyst fluid was collected and scolex were stained with Mayer's Carmalum, cleared with beechwood creosote and preserved in Canada balsam and analyzed under a brightfield microscope (Figs 3a,b). The species was identified to *E. vogeli* taking into account the number (34) and shape of the hooks, greater dimensions of the blade (0.0178 mm) in relation to the guard (0.0158 mm) and total length (0.0372 mm) and the comparison with other species of the genus *Echinococcus*, according to Rausch and Bernstein (1972), Rausch et al. (1978) D'Alessandro et al. (1981) and Meneghelli et al. (1990) (Fig. 3c). Specimens were deposited in the Helminthological Collection of the Instituto Oswaldo Cruz (CHIOC) no. 34336 (whole mount).

Human cases of polycystic echinococcosis due to *E. vogeli* have been described from Panama (1 case), Colombia (13 cases), Ecuador (6 cases) and Venezuela (2 cases) (D'Alessandro et al. 1979, D'Alessandro 1997). In Brazil related cases of this disease were referred to occur in the vicinity of State of Amazonas (10 cases) (Meneghelli et al. 1986, 1992, Pacheco et al. 1986, Timmerman et al. 1986, Meneghelli 1989, Ferreira et al. 1995) and in the mid west (2 cases) and southeast (6 cases) regions (Meneghelli 1985, Ferreira et al. 1987, 1995, Soares & Amaral 1998) indicating that the zoonosis may be widely spread. Although another case was detected in the neighborhood of Amazonas, it is to be supposed that other cases remain unreported in this region, considering that other states near Amazonas and bordering countries have been assigned on what refers to the geographical distribution of echinococcosis (Fig. 4).

The reported case assembles the necessary epidemiological conditions to the transmission of polycystic echinococcosis, since the patient was used to hunting wild animals, including pacas that may have *E. vogeli* (Rausch et al. 1981). Moreover, she came from an area where the

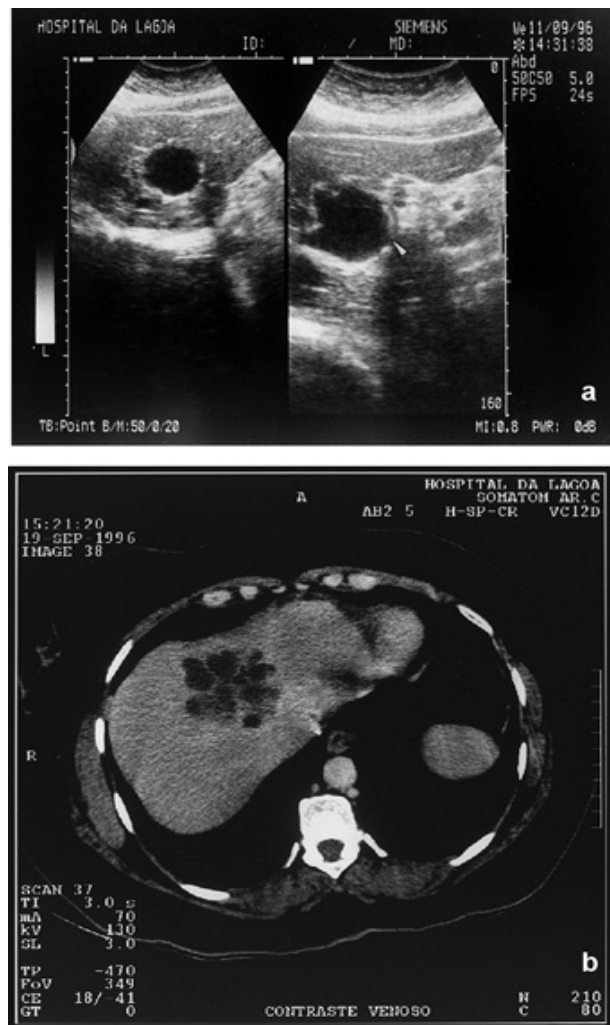


Fig. 1-a: abdominal ultrasonography showing enlargement of the square segment of the left lobe of the liver, heterogeneous hepatic texture with multiple surrounding cysts with mobile content in the interior of the cyst; b: computerized tomography; liver with normal volume and heterogeneous texture, with multiple cystic images, a larger, central, 4 cm in diameter and other peripheral, with different forms in the lateral segment of the left lobe

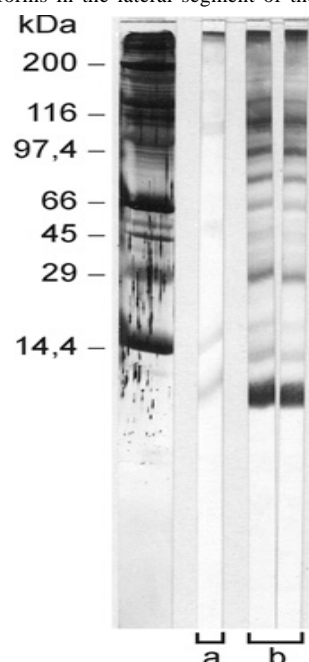


Fig. 2: Immunoblot test - a: negative control; b: positive control

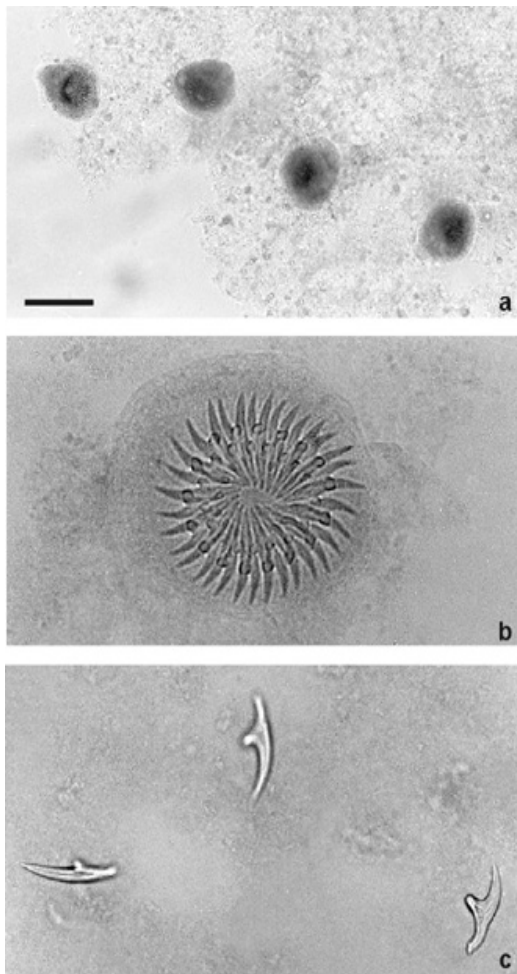


Fig. 3-a: scolex in the fluid. Bar = 0.1 mm; b: detail of the double row of rostellar hooks, apical view. Bar = 0.02 mm; c: rostellar hooks. Bar = 0.02 mm. Bar common to a, b, c

pacas and the wild dogs occur as previously referred by D'Alessandro (1997) and D'Alessandro et al. (1981).

The immunoserological assays data are in accordance to Romani (1995) and Ayadi et al. (1995) and detected the same molecular weight bands, appearing in sera from patients infected with *E. granulosis*. Maddison et al. (1989) identified a specific antigen of *E. granulosis* with a relative mass of about 8 kDa. The reactivity of this antigen with sera from infected patients showed 91% of sensibility and was 100% specific, in despite of the cross-reactions observed in sera from patients harboring *E. multilocularis* and *E. vogeli*. Cross-reactions were also observed by Ferreira and Zaha (1990), Verástegui et al. (1992) with the same antigen with sera from patients with schistosomiasis, filariasis and cysticercosis. Seropositivity cystic echinococcosis was observed even when *E. vogeli* antigen fraction was employed (Gottstein et al. 1995).

Nevertheless, molecular weights of 21 and 31 kDa seem to be specific to the genus *Echinococcus* and not to a particular species. From the epidemiologic point of view, differential diagnosis may be irrelevant because *E. vogeli* and *E. multilocularis* are allopatric in distribution (Gottstein et al. 1995). Thus, the present specific identification was based on morphological data only.

The present findings may be included among those with the most common clinical aspects of the polycystic echinococcosis in Brazil: abdominal localization affecting the liver with palpable aching mass, loss of weight and the thoracic localization represented by the involvement of the vena cava (D'Alessandro 1997). The parasitosis seems to be neither sex nor age related and the period of manifestation varies from one month to 13 years. The average age (44 years) of the patients is close to the present case (48 years old), according to previous reports (D'Alessandro 1997). Nevertheless, the patient did not present splenomegaly, jaundice, portal hypertension and alteration of laboratorial tests, observed in other cases (D'Alessandro et al. 1996).

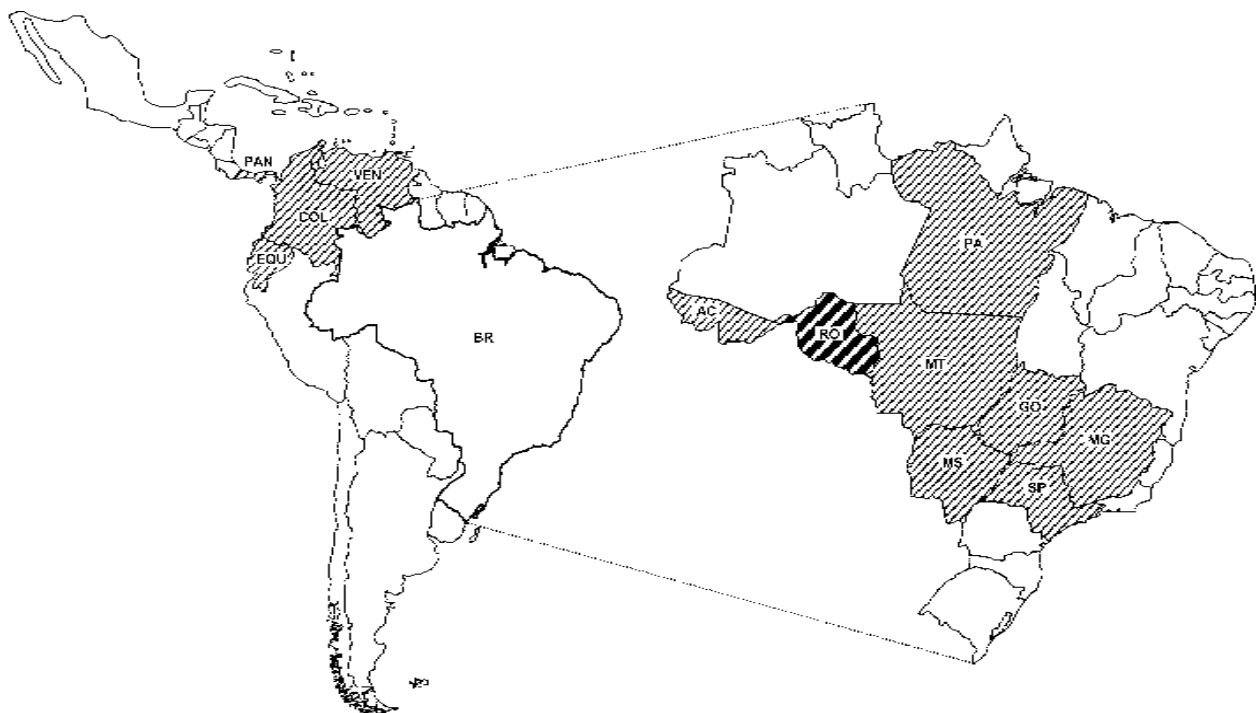


Fig. 4: geographical distribution of human echinococcosis by *Echinococcus vogeli*, including the present report in Rondônia (RO) Brazil.

Most surprising is a lack of data on the cases in the State of Amazonas, suggesting that this zoonosis is under-diagnosed (D'Alessandro 1997). There is an urgent need to investigate the ethiology of abdominal masses detected in individuals from the Brazilian Mid-west and North regions, mainly in those that are either fond of hunting wild rodents or that are in close contact with wild or pet carnivores that are feed with viscera of pacas and agoutis. In conclusion, our data confirm that reported cases of polycystic echinococcosis are tip of an iceberg (D'Alessandro 1997).

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