ISOLATED PULMONARY CYSTICERCOSIS IN AN URBAN SOUTH AFRICAN CHILD

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Abstract

Cysticercosis in humans is a serious public health problem, predominantly affecting low and middle-income countries (LMICs). Cysticercosis, the infection with the larval form of the pork tapeworm, Taenia Solium has high prevalence in areas where there are poor sanitary conditions and domestic pig without adequate veterinary control. Humans are the definitive host and pigs are the main source of infection. Human infection occurs when pork is eaten raw or undercooked. Ingested eggs or proglottids hatch into larvae form, which penetrate the intestinal wall into the blood stream and migrate into different organs including subcutaneous tissues, brain, eyes and rarely heart or lung, where they mature into cysticerci. Pulmonary cysticercosis has been rarely described; case reports are predominantly in adults and are usually of disseminated disease. In children the data are very scarce, with a single case report of a two-year old child with pulmonary infiltration, eosinophilia and subcutaneous cysticercosis.

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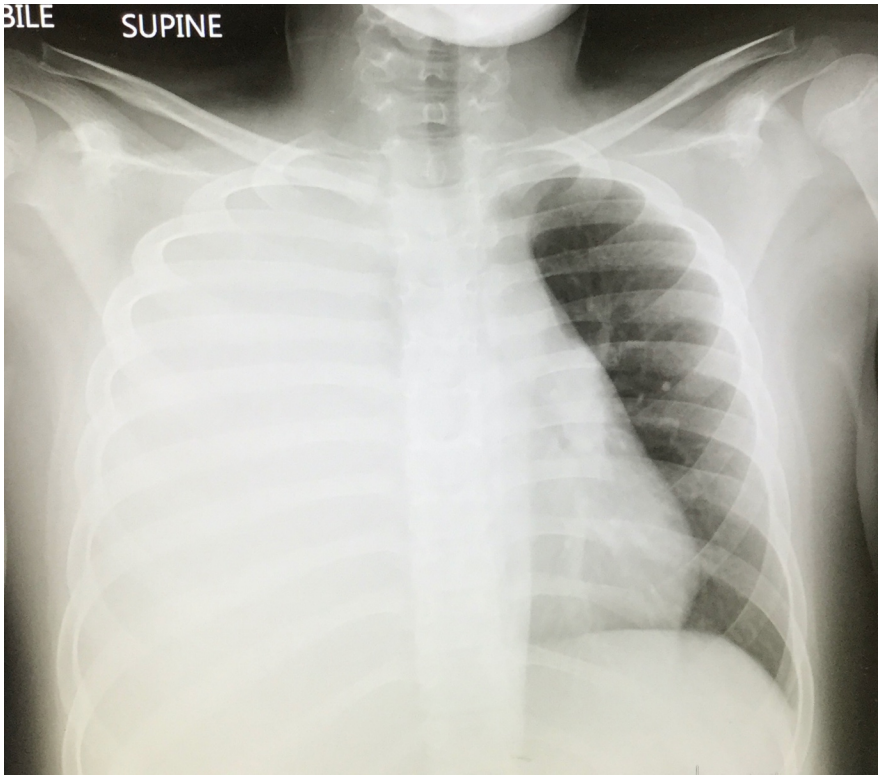
To the Editor : Cysticercosis in humans is a serious public health problem, predominantly affecting low and middle-income countries (LMICs) (1, 2). Cysticercosis, the infection with the larval form of the pork tapeworm, Taenia Solium has high prevalence in areas where there are poor sanitary conditions and domestic pig without adequate veterinary control(1). Humans are the definitive host and pigs are the main source of infection. Human infection occurs when pork is eaten raw or undercooked. Ingested eggs or proglottids hatch into larvae form, which penetrate the intestinal wall into the blood stream and migrate into different organs including subcutaneous tissues, brain, eyes and rarely heart or lung, where they mature into cysticerci(3). Pulmonary cysticercosis has been rarely described; case reports are predominantly in adults and are usually of disseminated disease. In children the data are very scarce, with a single case report of a two-year old child with pulmonary infiltration, eosinophilia and subcutaneous cysticercosis (3).

We describe an 8-year-old child with pulmonary cysticercosis who presented to Red Cross Children' s Hospital, Cape Town, South Africa, with a large right pleural effusion. She presented with five days of cough, fever and shortness of breath. She resided in a poor informal settlement, in an urban area of Cape Town and had no recent travel history or underlying illness. She had no direct contact with pigs, although consumed pork. There was no known household or close contact with tuberculosis (TB). On examination she was well nourished, with a temperature of 38 degrees Celsius, respiratory rate of 36 breaths per minute and oxygen saturation of 96 % in room air. She had mild subcostal chest retractions, tracheal deviation to the left side with dullness to percussion and reduced breath sounds on the right chest.

Chest x-ray showed complete opacification of the right hemithorax and mediastinal shift to the left, fig 1.

Fig 1: Frontal chest Xray showing opacification of the right hemithorax, and mediastinal shift to the left.



In the emergency unit, 660 ml of straw-colored fluid was aspirated from the right hemithorax and sent for laboratory analysis. She was admitted, treated with oral antibiotics for possible bacterial pneumonia, started on TB treatment with prednisone and a pigtail chest drain was inserted to drain the pleural fluid.

Laboratory investigations showed a C-reactive protein of 239 mg/L, which was significantly raised. The raised C-reactive protein was probably due to the inflammatory response rather than superimposed bacterial infection((1). The full blood count with a white cell count 12.86 x10^9/L (neutrophils 58 %, lymphocytes 28 %, monocytes 12 %, eosinophils 1%), hemoglobin 12.4 g/dL and platelets 419 x 10^9/L. Pleural fluid was consistent with an exudate: protein 59 g/L, adenosine deaminase 42.0 U/L, with lymphocyte predominance: lymphocytes 856 /uL, polymorphs 5 /uL. Fluid was negative by GeneXpert Ultra for *M. tuberculosis* and negative for bacteria and TB culture. Surprisingly, a pale- pink cystic structure measuring 65 x 25 x 8 mm drained through the pigtail drain; histology showed a degenerate cyst wall composed of oedematous villous-like projections and comprising of an outer cuticular layer, middle cellular layer and inner fibrillary layer, in keeping with a degenerate cysticercosis, Fig 2. This cyst was probably located on lung surface or in pleura, hence the result of pleural effusion.

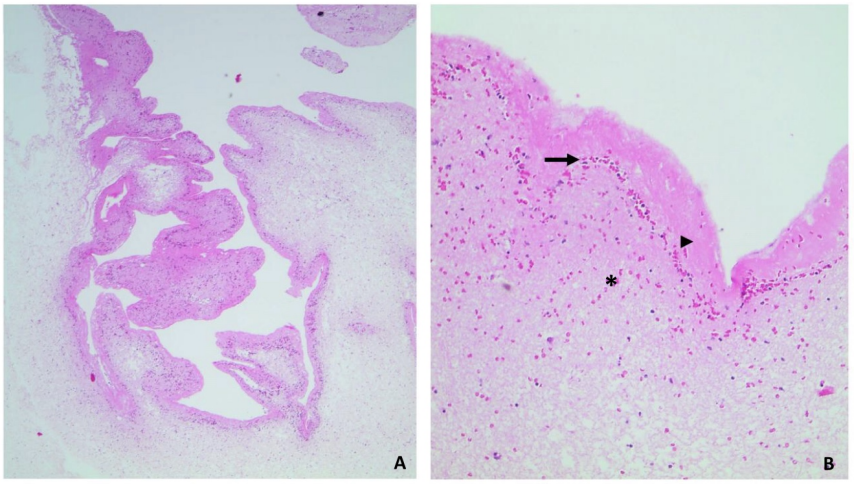


Fig 2: Figure 2A shows a degenerate cyst wall composed of oedematous villous-like projections.

Figure 2B is a high power view showing the outer cuticular layer (arrowhead), middle cellular layer(arrow) and inner fibrillary layer (*).

The child was therefore, started on albendazole 15 mg/kg/day for one month. A CT scan of the brain was done for intracranial cysticercosis, which revealed a non- specific solitary sub centimeter calcified granuloma abutting the tentorium cerebellum.

On follow up at 4 months of albendazole and prednisone, she was clinically and radiologically much improved. A follow-up CXR showed resolution of pleural effusion and aerated right lung, fig 3.

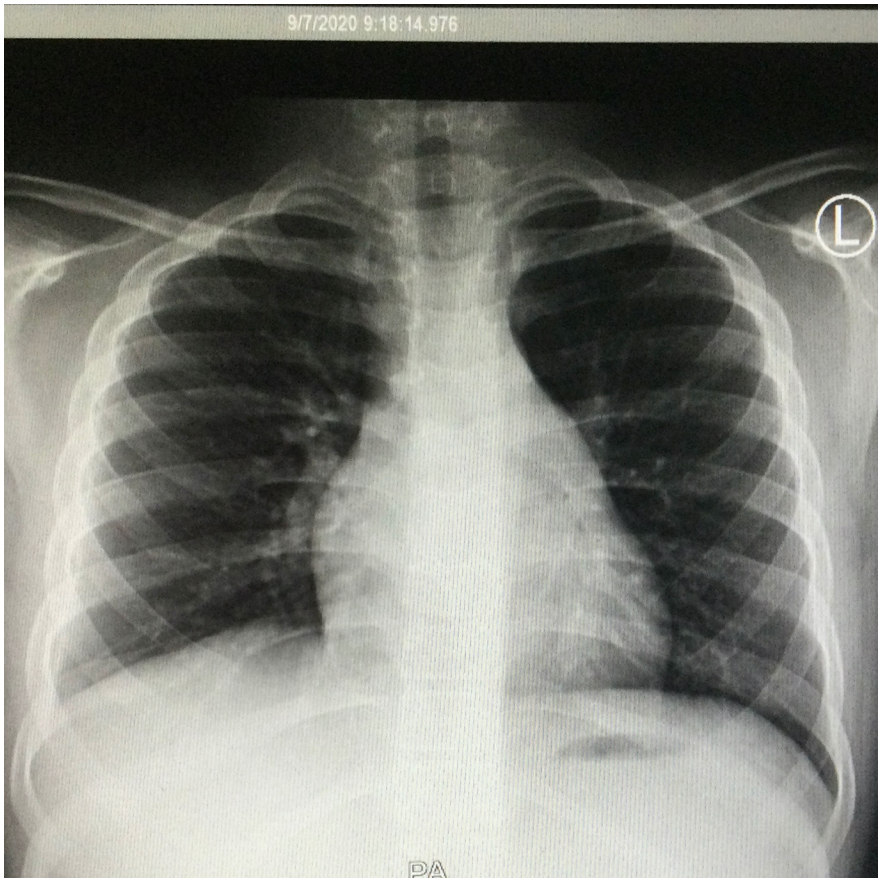


Fig 3: Frontal CXR at 4 months follow up, showing complete resolution of the pleural effusion

This is one of the first reported cases of isolated pulmonary cysticercosis in a child. Even in the adult population, pulmonary cysticercosis has usually been reported as part of disseminated disease, with only four cases of isolated pulmonary cysticercosis reported in over 20 years(1). Underdiagnosis of pulmonary disease may be a concern, as it may be difficult to definitively diagnose disease; in our case, definitive diagnosis was possible with histology. However, in South Africa and other LMICs, cysticercosis in the form of neurocysticercosis presenting as epilepsy, is common, and has been recognized as a health problem for many years(4, 5).

As a result, the World Health Organisation (WHO) guidelines for the surveillance, prevention and control of cysticercosis, recommend deworming of all children from one year up to 12 years of age every six months in endemic areas(6)

The detection of cysticercosis is a public health concern, as it implies that preventative measures and disease control programs are inadequate . Health care professionals should ensure that every child they come in contact with, is up to date with the deworming program, especially in endemic countries(6)

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