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Multiple Hydatid Cyst Localisations in a Immunocompetent Child (Cerebral, Pulmonary and Hepatic): A Case Report

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Abstract **Case Report**

Hydatid disease is a parasitosis, caused by Echinococcus Granulosis, which is very common in Morocco [2], mainly in children. Humans are affected accidentally by direct contact with dogs, or by contamination of plants or water [1]. The lung is the organ most affected by the disease. Cerebral localization is rare, representing only 1 to 3% of cases [1]. Symptomatology is dominated by an intracranial hypertension symptomatology, diffuse headaches associated with various neurological signs related to the location of the tumor [3]. ***Objectives*:** to illustrate the interest of CT in the positive diagnosis and the follow up of cerebral hydatid cyst in children. We report the case of a 7-year-old boy, treated initially for cerebral hydatid cyst, and diagnosed afterwards with pulmonary and hepatic hydatid cysts.

Keywords: Cerebral Hydatid Cyst, Pulmonary Hydatid Cyst, Hepatic Hydatid Cyst, CT.

INTRODUCTION

Echinococcosis c that is one of the most important zoonoses worldwide. It is a significant public health problem and economic burden. Cystic echinococcosis (CE) is a type of echinococcosis caused by the parasite Echinococcus granulosus, which is widespread globally. Cysts can occur at virtually any anatomical location, although the liver (70–80%) and lung (10–30%) are the most frequently affected organs, followed by other regions of the body (10–15%). Cases of multivisceral echinococcosis are very rare but can have severe consequences and may even be fatal, depending on the localization. We present here the case of a male patient with cysts located in the liver, lung and the brain. The clinical manifestations, blood test results, imaging and histological findings, and treatment are discussed [1].

CASE REPORT

A 7-year-old boy arrived to the emergency room for a brain trauma caused by a domestic accident with initial loss of consciousness. The patient was living in a rural environment with a notion of contact with dogs, with no particular pathological history and good psychomotor development.

The clinical examination found a conscious patient, apyretic, whose neurological examination showed a right hemiparesis.

The initial scannographic findings showed a voluminous left fronto-parieto-occipital cerebral cyst, round in shape, with a thin wall, showing a discreet focal thickening of the wall, spontaneously hypodense, not enhanced after contrast injection, measuring 93 x 80 x 87 mm in diameter (Anteroposterior x Transverse x Craniocaudal), causing a mass effect on the midline structures: subfalcine herniation (shift=19 mm) and an active hydrocephalus by exclusion. (Figure 1)

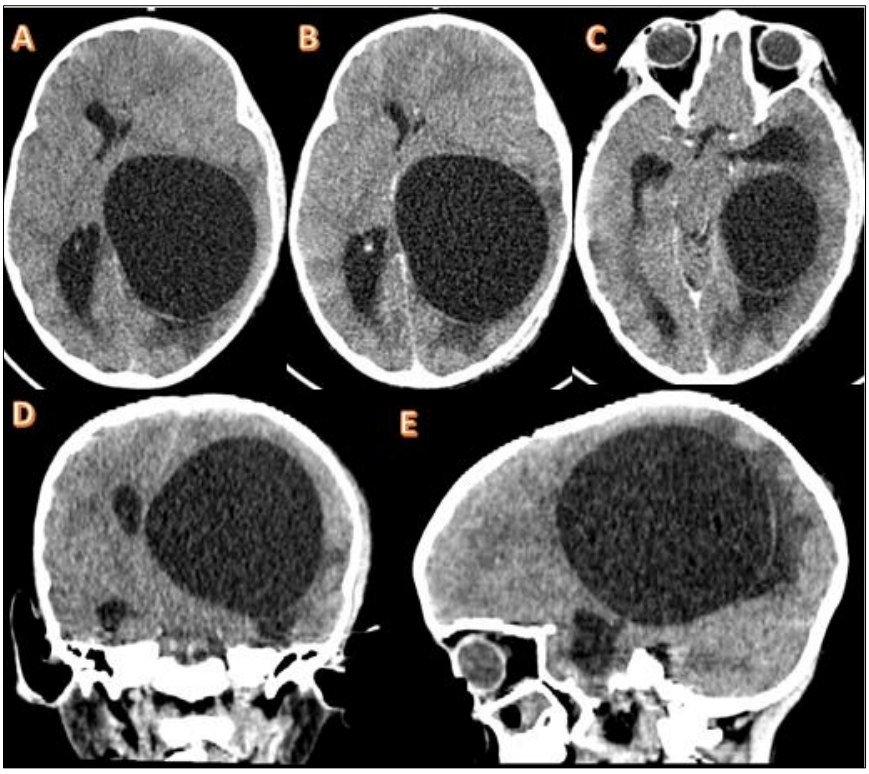
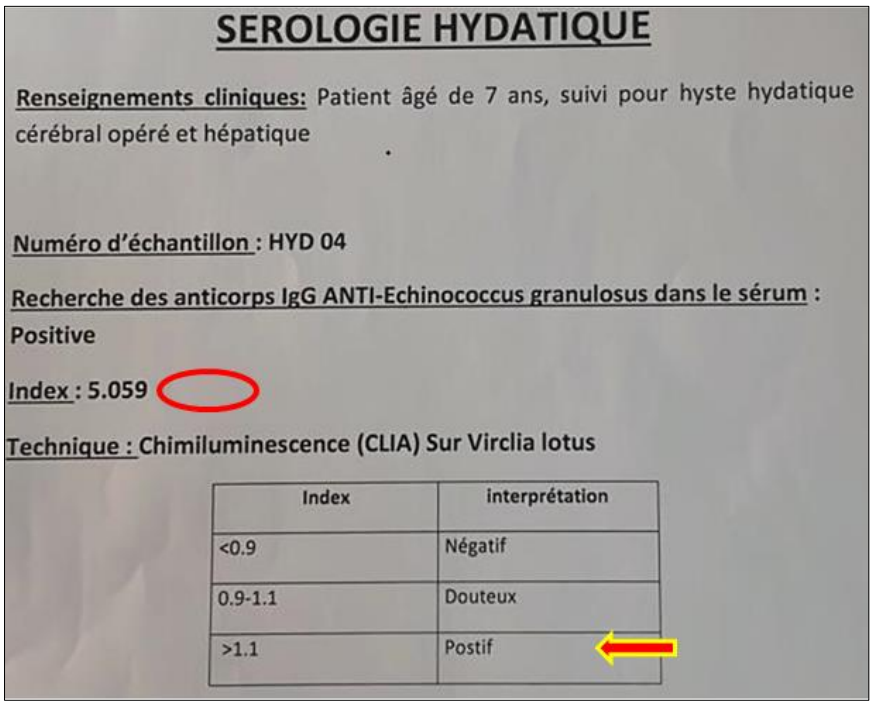


Figure 1: Cerebral CT scans in axial, sagittal, and coronal sections before contrast agent injection (A) and after contrast agent injection (B, C, D, E), showing a non-enhancing cystic formation in the frontoparietal-occipital region.

A diagnostic hypothesis of hydatid cyst was made based on the neuroradiological findings.

A hydatic serology has been requested and came up positive. (Figure 2)



SEROLOGIE HYDATIQUE

Renseignements cliniques: Patient âgé de 7 ans, suivi pour hyste hydatique cérébral opéré et hépatique

Numéro d'échantillon : HYD 04

Recherche des anticorps IgG ANTI-Echinococcus granulosus dans le sérum : Positive

Index : 5.059

Technique : Chimiluminescence (CLIA) Sur Virclia Iotus

Index	interprétation
<0.9	Négatif
0.9-1.1	Douteux
>1.1	Postif

Figure 2: Positive hydatic serology

The patient was urgently admitted to the operating room for surgical removal of the cyst.

The surgical technique used is cyst delivery by hydrodissection following the Arana Iniguez method. (Figure 3)

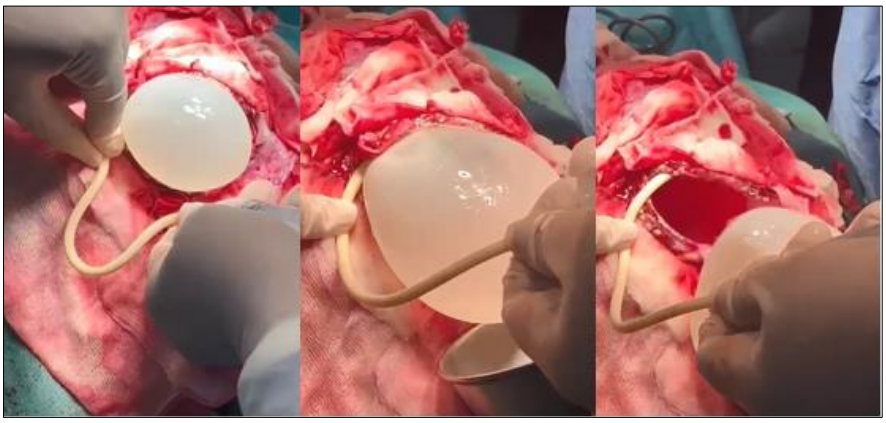


Figure 3: Actual images during our patient's surgery

The diagnosis of hydatid cyst was retained after a parasitological study of the surgical specimen. (Figure 4)

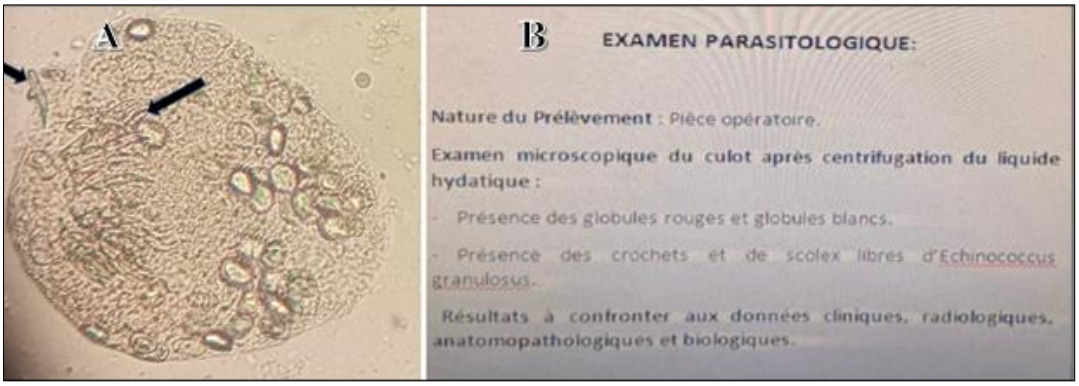


Figure 4: Actual image of the parasitological exam of our surgical specimen (A) and its result (B)

A follow-up cerebral CT scan was requested four months later. (Figure 5)

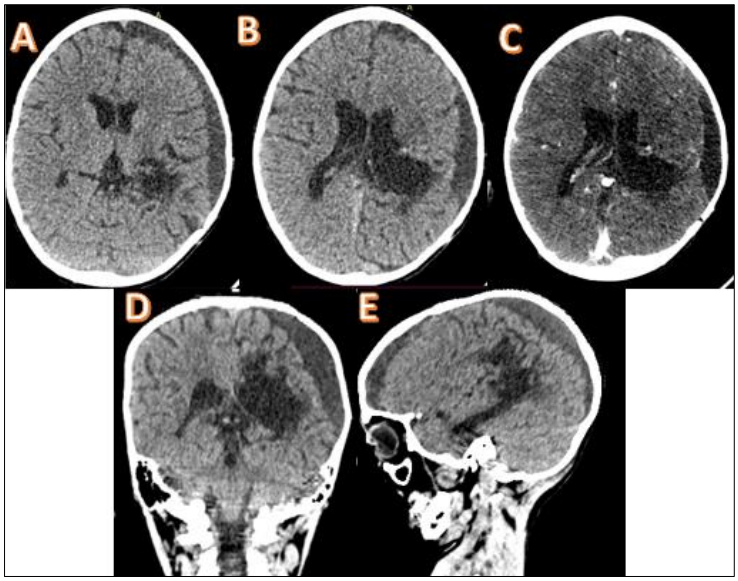


Figure 5: Cerebral CT scans in axial, sagittal, and coronal sections before contrast agent injection (A, B) and after contrast agent injection (C, D, E), showing a non-enhancing left fronto-pariéto-temporal collection related to a cerebral hygroma, and a left para-ventricular sequel like hypodensity responsible of an attraction of the left lateral ventricle

A thoraco-abdominal scan has been requested to look for other possible localisations. The result was: one pulmonary cyst (figure 6) and multiples hepatic cysts (figure 7).

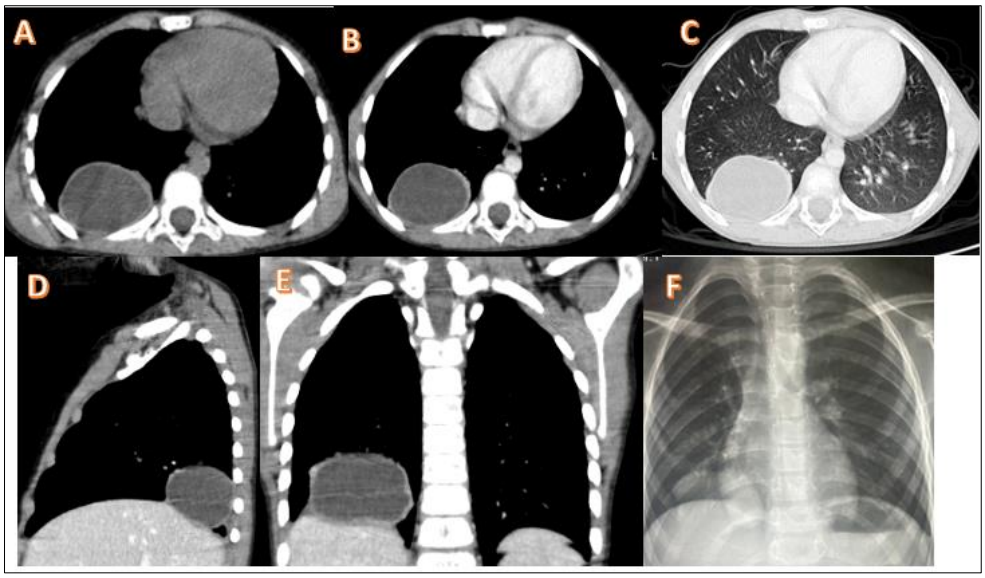


Figure 6: Thoracic CT scans in axial sections in mediastinal window without (A) and with contrast injection (B), in a parenchymal window (C), sagittal (D) and coronal (E) sections after contrast injection showing: A Cystic pleuropulmonary right posterior basal lesion, well-defined, with a thin and regular wall, discreetly thickened in some areas, spontaneously hypodense with liquid density, enhanced at the periphery after contrast injection, Antero-posterior X Ray (F). A Right posterior basal opacity whose inner edge does not merge with the heart

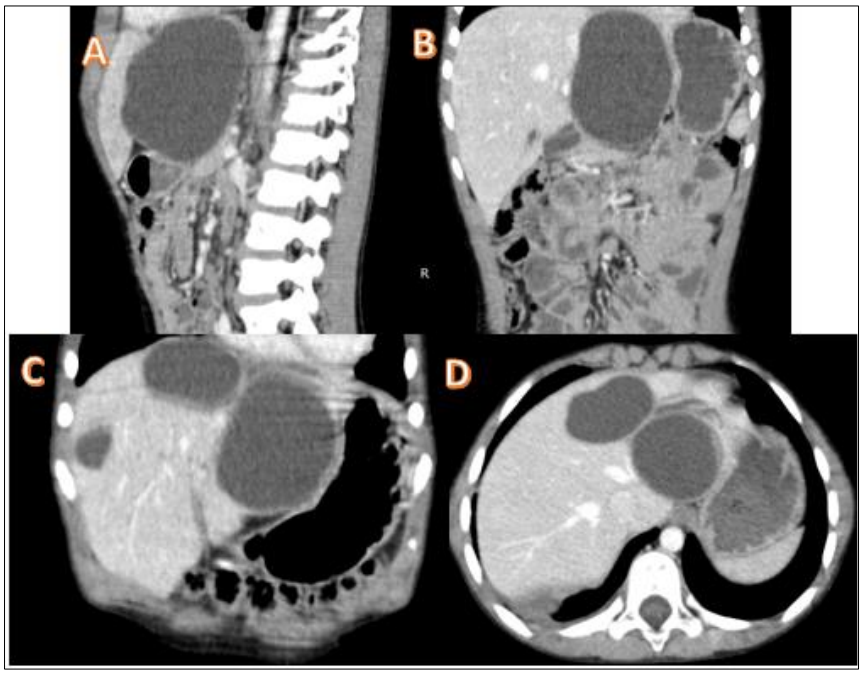


Figure 7: Abdominal CT scans in sagittal (A), coronal (B) and axial (C, D) sections with contrast injection showing: Three cystic hepatic formations with the largest one located in segments VI overlapping on segments I and II, well defined, with a thin wall, and spontaneously hypodense, related to a multiple hydatid cysts classified as Gharbi type 1

DISCUSSION

Hydatid disease is an endemic parasitosis in some traditional cattle-breeding countries such as Morocco [2]. Cerebral localization of hydatid disease is rare, its frequency is estimated at 2% even in countries where hydatidosis is endemic, it occurs most often in children and young adults before the age of 15, with a male predominance [3].

The cerebral localization symptoms are not specific and associates focal neurological signs and/or signs of intracranial hypertension with visual disorders. Isolated psychiatric manifestations are rare [3, 4]. Physical examination may show increased head circumference in infants, motor deficits, and involvement of the cranial pairs. The fundus often shows papilledema and exceptionally optic atrophy.

Rural origin of infested patients is found in the majority of cases. Cerebral hydatid cysts are often solitary, usually located supra tentorially, sometimes infra-tentorially [4]. Multiple localizations are even rarer, mostly associated to a hepatic or pulmonary localization [5]. In Ganzi County in southwestern China with a 72 000 total of population, a cross-sectional study was done that included 195 patients who were diagnosed with hepatic hydatid cyst, only one patient presented a triple hydatid cyst localizations (hepatic, pulmonary and cerebral) [7].

Cerebral MRI is essential in the case of a remodelled cyst, better defining the relationship of the lesion with the surrounding structures and allowing the elimination of differential diagnoses such as cystic gliomas, arachnoid cysts, other infectious processes (brain abscess), the cyst wall is thick in these cases with or without contrast [5].

The hydatid cyst is shown on MRI by a formation in hyposignal T1 and FLAIR, in hypersignal T2, in hyposignal diffusion with a low ADC, with a thin wall; without associated peri-lesional edema, this is the case in 75% of cases [6]. On the other hand, when there is peri-lesional edema, with wall contrast, the hydatid cyst is said to be complicated, and the problem of differential diagnosis arises. Cerebral MRI would allow better localization and characterization of the cerebral hydatid cyst than CT.

Cerebral CT is the reference examination [7], it typically visualises a cystic intraparenchymal mass, round or oval, of variable volume, with well-defined contours and fluid content with the density of cerebrospinal fluid, exerting a mass effect on the median structures and lateral ventricles without contrast and without peri-lesional edema. Calcifications are extremely rare, less than 1%. The bone deformations encountered in children, such as thinning of the vault and disjunction of the sutures, are the corollary of the surprising tolerance linked to the extensibility of the cranium in children [8].

The symptoms of the hepatic cysts are not specific either, as the cysts enlarge local pressure causes a mass effect on surrounding tissue producing symptoms and signs. These may be generalised with upper abdominal pain and discomfort or more specific. Such as; obstructive jaundice. Biliary rupture may occur through a small fissure or bile duct fistula. A wide perforation allows the access of hydatid membranes to the main biliary ducts, which can cause symptoms simulating choledocholithiasis, or to the peritoneal cavity and the symptoms will include those of peritonitis [9].

Otherwise, the pulmonary hydatid cyst is commonly non-symptomatic, unless it's complicated. The most severe complication is the rupture; it may lead to sudden onset of chest pain, hemoptysis, cough, and fever or rarely a salty taste in the mouth. Urticaria and wheezing to anaphylaxis may occur due to hypersensitivity of the ruptured cyst, which at times may be life threatening [10].

On thoracic radiography, a healthy hydatid cyst is manifested by a round or oval opacity with clear contours, of water density, this is the most frequent aspect, found in 52.2 to 78% in the literature. In case of ruptured cyst in the bronchi, the aspect found is a hydro-aeric image with regular or irregular level, corresponding to the typical floating membrane image performing the sign of Nenuphar, which is a pathognomonic sign noted in 16-30% of complicated KHP cases [10].

Thoracic computed tomography in hydatic pathology is reserved only for complicated and atypical forms. It confirms the cystic nature of pulmonary opacity and can count lesions and look for other possible chest locations that may go unnoticed by standard radiography. Different scannologic aspects can exist and depend on the state of the cyst. A healthy cyst is most often presented as a single fluid mass that is sometimes voluminous, homogeneous, well-limited, surrounded by a smooth and even wall. When the cysts are multiple, they achieve a «balloon release» aspect noted in 9.8% of cases [11].

Regarding the radiological diagnosis of the hepatic hydatid cyst, ultrasonography and CT findings are still the most valuable analytical methods for diagnosis even if they are not specific [10]. The ultrasonographic image of hydatid cyst can be viewed in multilocular, unilocular or calcified appearance, even though it may change with the stage of parasite depending on the reaction of the host [12].

The prognosis is good if the disease is treated early to avoid neurological sequelae such as epilepsy, blindness secondary to the intracranial hypertension syndrome (linked to the delay in diagnosis) and motor deficits [13]. Prophylaxis requires breaking the cycle by treating the dogs and destroying the corpses of infested cattle.

CONCLUSION

The cerebral localisation of hydatid cysts is rare and is mainly observed in children in endemic area, the clinical picture is dominated by intracranial hypertension

associated or not with an deficit syndrome of progressive evolution.

Early preoperative diagnosis is crucial for successful surgery. It has become easier thanks to the advent of imaging techniques, especially CT and MRI.

In the case of any diagnosed cerebral hydatid cyst, surgical treatment is essential in order to avoid complications and neurological sequelae.

REFERENCES

1. Cai, X., Cai, H., Gan, Q., Chang, W., Yuan, F., Luo, W., ... & An, J. (2019). Case report: Rare presentation of multivisceral echinococcosis. *The American Journal of Tropical Medicine and Hygiene*, *100*(5), 1204.
2. Salaou, O., Ibahiouin, K., Chellaoui, A., Hilmani, S., Lakhdar, A., Naja, A., Sami, A., Achouri, M., Ouboukhlik, A. (2007). EL Azhari Abdessamad "Intracerebral hydatid cyst: about 104 cases" *AJNS*, 26, 1.
3. El Saqui, A., Aggouri, M., Benzagmout, M., Chakour, K., & El Faiz Chaoui, M. (2017). Cerebral hydatid cysts in children: about 15 cases. *The Pan African Medical Journal*, *26*, 205-205.
4. Asri, F., Tazi, I., Maaroufi, K., El Moudden, A., Ghannane, H., & Benali, S. A. (2007). Kyste hydatique cérébral et troubles psychiatriques. A propos de deux cas. *L'Encéphale*, *33*(2), 216-219.
5. Bteich, F., Moussa, R., & Trak, V. (2020). Kyste hydatique cérébral: à propos d'un cas et revue de la littérature. *Neurochirurgie*, *66*(4), 291.
6. Braham, E., Bellil, S., Bellil, K., Chelly, I., Mekni, A., Haouet, S., & Zitouna, M. (2007). Hydatid cyst of the posterior fossa. *Medecine et maladies infectieuses*, *37*(5), 281-283.
7. Li Ma MDa, De-Cai, C., & Shi-Yue, Z. (2018). "Epidemiological characteristics of hepatic Echinococcosis, concurrent cerebral Echinococcosis, and pulmonary echinococcosis in Ganzi County, Sichuan Province, China" DOI: 10.1097/MD.0000000000019753.
8. ELMouden, H., Aicha, E., Siham, S., Kamilia, C., Dalal, L., & Lahcen, O. "Cerebral Hydatid Cyst in Children Revealed by Brain Traumatic" DOI: 10.36347/sasjm.2021.v07i11.001
9. Tiaoying, L., Jiamin, Q., Wen, Y., Craig, P. S., Xingwang, C., Ning, X., ... & Schantz, P. M. (2005). Echinococcosis in Tibetan populations, western Sichuan province, China. *Emerging infectious diseases*, *11*(12), 1866.
10. Chenin, M., Paisant, A., Lebigot, J., Bazeries, P., Debbi, K., Ronot, M., ... & Aubé, C. (2022). Cystic liver lesions: a pictorial review. *Insights into Imaging*, *13*(1), 116.
11. Sarkar, M., Pathania, R., Jhobta, A., Thakur, B. R., & Chopra, R. (2016). Cystic pulmonary hydatidosis. *Lung India*, *33*(2), 179-191.
12. Srinivas, M. R., Deepashri, B., & Lakshmeesha, M. T. (2016). Imaging spectrum of hydatid disease: usual and unusual locations. *Polish journal of radiology*, *81*, 190.
13. Ciurea, A. V., Vasilescu, G., Nuteanu, L., & Carp, N. (1995). Cerebral hydatid cyst in children: experience of 27 cases. *Child's Nervous System*, *11*, 679-685.