

HYDATID CYST – DIFFERENT ORGAN INVOLVEMENT: A PROSPECTIVE AND RETROSPECTIVE STUDY

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ABSTRACT

Hydatid disease/ hydatidosis is an endemic disease in sheep rearing countries. It has a world wide distribution and poses an important public health problem that is influenced by people's socioeconomic status and migration which spreads this disease. It is caused by the larval form of *Echinococcus granulosus*. The main host being the dog, the intermediate hosts are sheep, cattle, pigs and horses. Hydatid disease manifests when man becomes an accidental intermediate host. All sites of the body can be possible locations of the parasite. The most common sites are the liver followed by lung, kidney, bone and brain with the rare sites being breast, adrenals, heart, intra arterial, broad ligament and others. We conducted a retrospective and prospective study of different organ involvement of hydatid cyst reported in our department. The study spanned over a period of sixteen years and seven months, from March 1993 - October 2009. 34 specimens were received in the department of Pathology, SVIMS, Tirupati, which were reported as cases of hydatid cyst involving different organs, which included rare sites such as brain, kidney, breast, synovial tissue and retrouterine.

INTRODUCTION

Hydatid disease is endemic in sheep rearing countries (Greece, Australia, New Zealand and South Africa), caused by larval form of genus *Echinococcus* (E). *E. granulosus* causing cystic hydatid disease has world wide distribution. *E. multilocularis* causes alveolar hydatid disease, occurring in Alaska and Canada. *E. vogeli* causes polycystic echinococcosis, very rare in humans, and reported in Central and South America. Definitive host for *E. granulosus* is dog, for *E. multilocularis* it is fox, dog and cat. Intermediate hosts are sheep, cattle, pigs, horses and camels for *E. granulosus*, rodents for *E. multilocularis* and pacas, a wild rodent for *E. vogeli*. Hydatid disease occurs when man becomes accidental intermediate host by swallowing the eggs of the parasite. The swallowed eggs on reaching the duodenum release larva which burrow through the intestinal mucosa, enter the circulation and reach different organs. Liver is the major organ affected, particularly the right lobe followed by lungs and other organs (Anderson's Pathology, 1996).

In India, hydatid disease is common in most of the states; with predominance in Andhra Pradesh and Tamil Nadu (Amir Jahed *et al.*, 1975). Hydatid disease evokes much interest due to diversity of the anatomical involvement. Hence we undertook a retrospective and prospective analytical study of the number of cases of hydatid cyst reported in our Institute.

MATERIALS AND METHODS

A sixteen year and seven months retrospective and prospective

study was undertaken in our Institute, which included 34 resected specimens of hydatid cyst received by department of Pathology. All the specimens were preserved 10% Formalin and were subsequently subjected to histopathological examination with routine haematoxylin and eosin stain.

RESULTS

Among the 34 cases diagnosed histopathologically as hydatid cysts, involvement of the liver accounted for 12 (35.5%) cases, lung - 9 (26.5%), subcutaneous tissue - 5 (14.7%), spleen - 3 (8.8%) and solitary involvement of breast, kidney, brain, retrouterine and synovial tissues (2.9 % each) as given in Table 1. The youngest and the oldest were a 7 year old male child and a 70 year male, both presented with hydatid cyst of lung as given in Table 2. In our study we found a mild male preponderance (18 cases) when compared to females (16 cases) with a male to female ratio of 1.12:1 as given in Table 3.

Table 1: Distribution of lesions

Site	No. of cases	Percentage (%)
Liver	12	35.5
Lung	9	26.5
Subcutaneous tissue	5	14.7
Spleen	3	8.8
Breast	1	2.9
Retro uterine	1	2.9
Synovial tissue	1	2.9
Kidney	1	2.9
Brain	1	2.9

Table 2: Age distribution of lesions

Site	1-10 Yrs	11-20 Yrs	21-30 Yrs	31-40 Yrs	41-50 Yrs	51-60 Yrs	61-70 Yrs
Liver	-	4	6	1	-	1	-
Lung	1	1	3	3	-	-	1
Subcutaneous tissue	-	-	4	1	-	-	-
Spleen	-	-	1	2	-	-	-
Breast	-	-	1	-	-	-	-
Retrouterine	-	1	-	-	-	-	-
Synovial Tissue	-	-	-	-	1	-	-
Kidney	-	-	1	-	-	-	-
Brain	-	-	1	-	-	-	-

Table 3: Sex distribution of lesions

Site	Male	Female
Liver	6	6
Lung	6	3
Subcutaneous tissue	4	1
Spleen	1	2
Breast	-	1
Retrouterine	-	1
Synovial Tissue	-	1
Kidney	1	-
Brain	-	1
Total	18	16

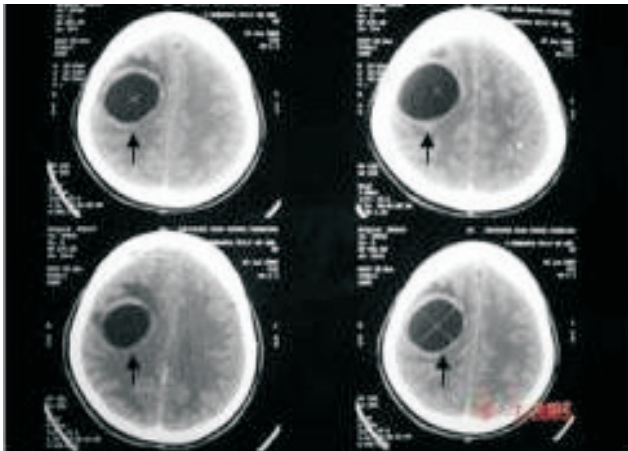


Figure 1: CT scan brain showing a hypochoic lesion in left frontoparietal region

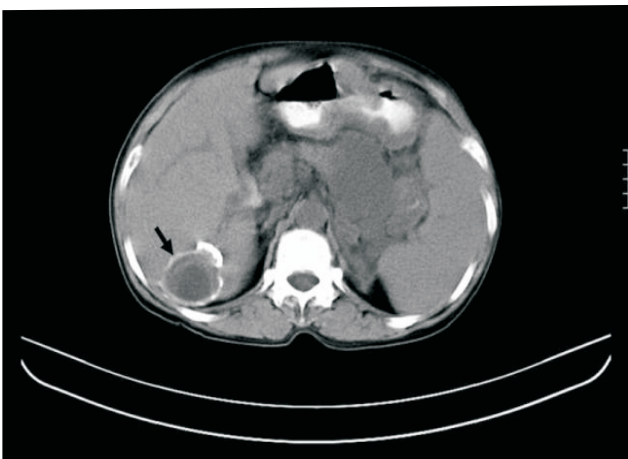


Figure 2: CT scan showing a hypochoic lesion in the liver

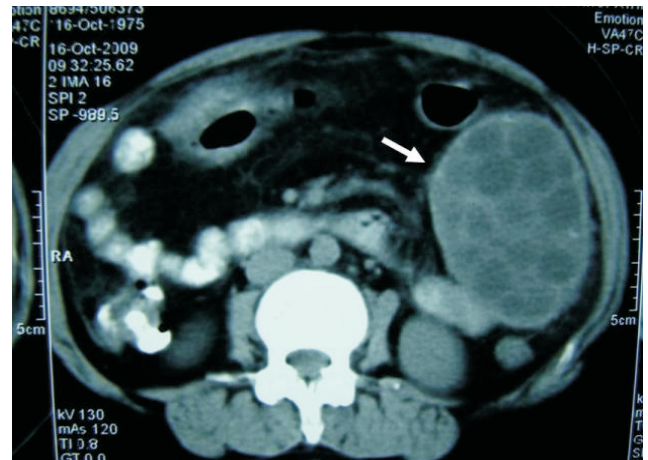


Figure 3: CT scan showing multiple hypochoic lesions in the spleen

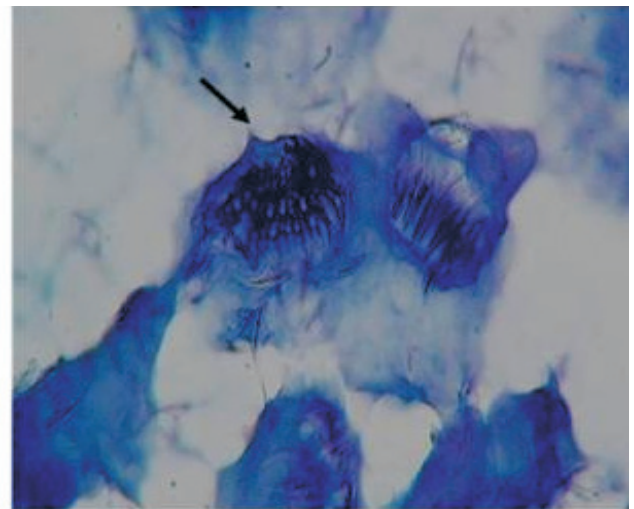


Figure 4: Cytocentrifuge smear showing scolices from the aspirate of brain lesion – 10X low power view

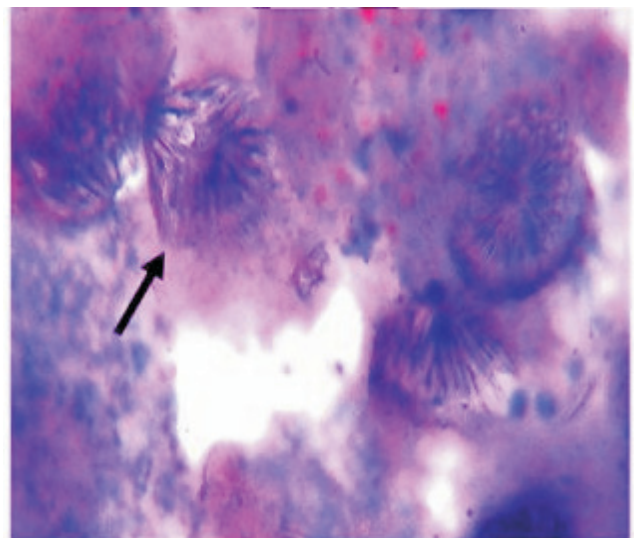


Figure 5: Cytocentrifuge smear showing scolices from the aspirate of brain lesion – 40X high power view

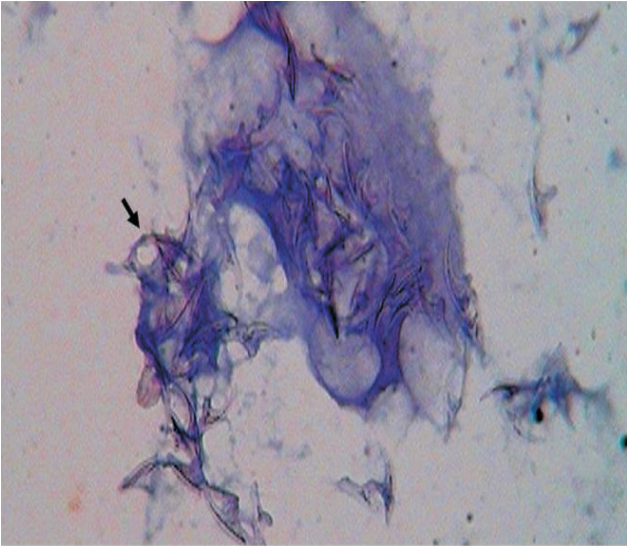


Figure 6: Cytocentrifuge smear showing hooklets from the aspirate of brain lesion – 10X low power view



Figure 7: Hydatid cyst of breast

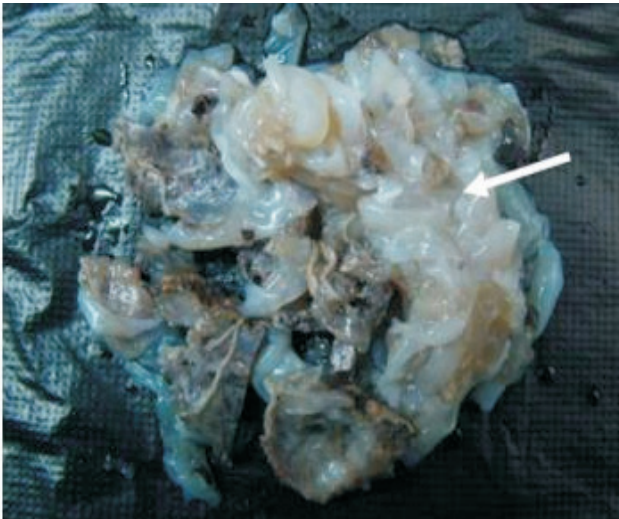


Figure 8: Gross specimen of lung hydatid cyst showing tender coconut like cystic masses

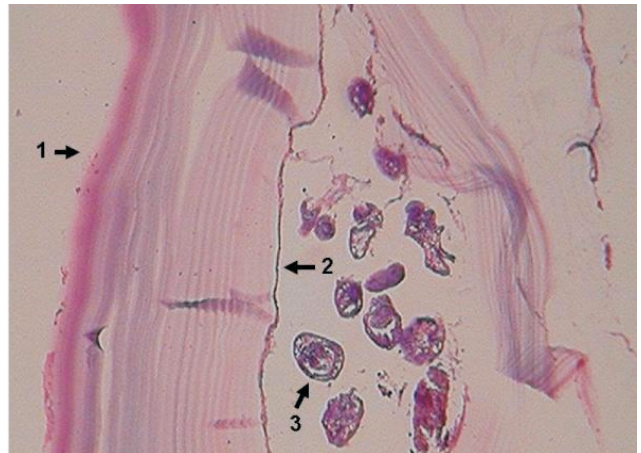


Figure 9: H and E slide showing ectocyst and endocyst with brood capsules – 5X scanner view

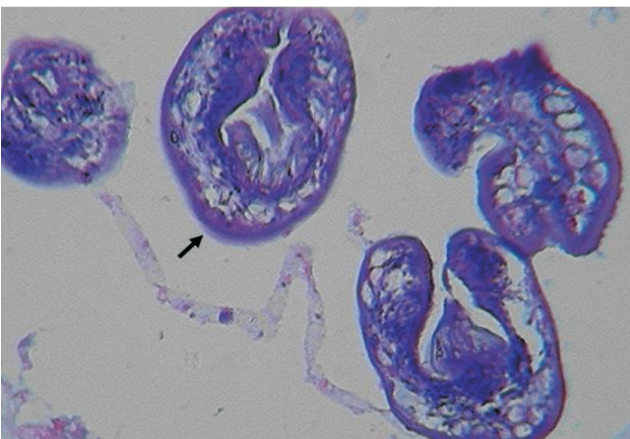


Figure 10: H and E slide showing brood capsules – 10X low power view

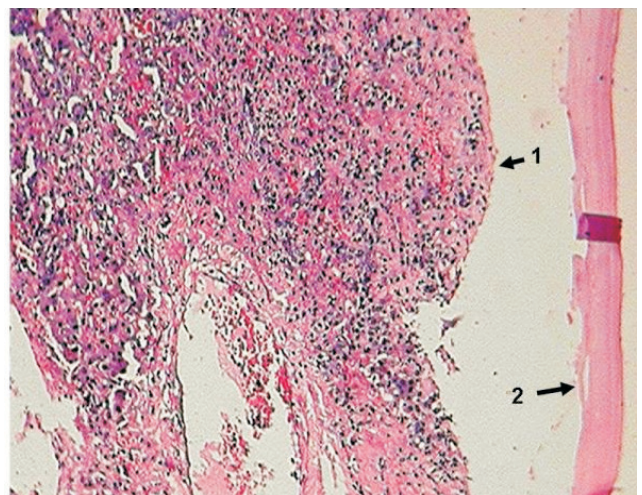


Figure 11: H and E slide showing hepatic parenchyma with congested blood vessels and hydatid cyst wall – 5X scanner view

DISCUSSION

In our study comprising of 34 cases of hydatid disease, the incidence of which was found to have a male predominance (Magath, 1941). It has been postulated that the sex predominance may be determined by which sex has more contact with the usual definitive host in that country (Jidejian, 1953; Somily *et al.*, 2005). We found that the liver was the most common affected organ, followed by lung, subcutaneous tissue, spleen, breast, kidney, brain, synovial tissue and retrouterine (Magath, 1941; Yuksel *et al.*, 2007; Bal *et al.*, 2008). Pulmonary involvement was predominantly seen in children and young adults (Miller, 1953; Polat *et al.*, 2003). Renal involvement is rare involving a single case (Polat *et al.*, 2003). In our study, cases with liver involvement, presented with right upper quadrant pain. Majority of the cases with lung involvement were asymptomatic and were detected during routine examination. We came across a single case of hydatid cyst of the breast, which is a rare site of occurrence (Farrokh, 2000; Arikan *et al.*, 2004; Saluja *et al.*, 2005). To the best of our knowledge retro uterine and synovial tissue hydatid cysts are also rarer sites.

We have recently reported a single case involving brain (Awasthy *et al.*, 2006). The patient was a 25 year old female, who presented with headache, weakness of the left side of the body, with deviation of the mouth to the right side and difficulty in eating. CT scan report was, ? brain abscess, ? tuberculoma, ? cystic tumor. Cytological diagnosis was hydatid cyst confirmed by histopathology. Histologically all cases showed inner nucleated germinal layer, an outer anucleated chitinous layer, with innumerable delicate laminations covered by an adventitial layer. In addition are seen brood capsules and scolices which constitute hydatid sand (Robbins and Cotran Pathologic Basis of Diseases, 2004).

CONCLUSION

The cases recorded in our Institute may encompass a smaller percentage, as many cases being asymptomatic, may go undetected. The study was presented as we have come across

some rare sites of presentation such as the breast, synovial tissue and retro uterine.

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