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RESEARCH ARTICLE

CLINICAL PROFILE AND SURGICAL MANAGEMENT OF ABDOMINAL HYDATID DISEASE IN ADULTS

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Abstract

Introduction: Hydatid disease is a disease that has been known since antiquity and was described by Hippocrates with the particular term "Liver filled with water" followed by famous Arabian physician Al-rhazes who wrote on hydatid cyst of liver about 1000 years ago. Hydatid disease commonly known as Cystic Echinococcosis (CE) is a parasitic infestation caused by flatworm Echinococcus granulosus. Hydatid disease is characterized by cystic lesions occurring in different parts of body most commonly liver (65%), lungs (15%). Unusual sites of involvement include muscles (5%), bones (5%),kidney (3%), spleen (2%), diaphragm (1%), ovary (0.2%).The peritoneal cavity, thyroid, breast, gall bladder, omentum are rarely involved.

Methods: Our study was a prospective observational study conducted in Postgraduate Department of General Surgery, Government Medical College, Srinagar, J&K for a period of 2 years. This study included 30 patients after fulfilment of inclusion and exclusion criteria. Ethical clearance was obtained from institutional Ethical Committee.

Results: In this study 30 cases of hydatid disease were studied, the most common age group involved in this disease was 21-30 years. . Most of our patients were females 18 cases (60%) and males 12 cases (40%). Male: Female ratio of our study is 1:1.5. Majority of patients presented with abdominal pain 24 cases (80%) followed by vomiting in 5 cases (16.7%), palpable mass was found in 1 case (3.3%) and Jaundice in 1 case (3.3%). Laparoscopic hydatid cystectomy for hydatid liver was done in 10 cases (33.3%). Open hydatid cystectomy was done in 17 cases (56.7%).

Conclusion: Hydatid disease can occur in any age group but is seen most commonly in middle age , females, patients belonging to low socioeconomic status and involved in farming. Low socioeconomic status, agricultural activities and association with dogs or cattle were risk factors for the disease. Absence of history of contact with cattle or dogs doesn't rule out the possibility of disease.

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Introduction:-

Hydatid disease is a disease that has been known since antiquity and was described by Hippocrates with the particular term "Liver filled with water" followed by famous Arabian physician Al-rhazes who wrote on hydatid cyst of liver about 1000 years ago[1-2]. Hydatid disease commonly known as Cystic Echinococcosis (CE) is a parasitic infestation caused by flatworm Echinococcus granulosus.[3] The echinococcus granulosus has been described as most frequent cause of hydatid cyst.[4] Three broad morphological forms of echinococcus are recognised clinically: cystic echinococcosis caused by echinococcus granulosus, alveolar echinococcus caused by echinococcus multilocularis and polycystic echinococcus caused by echinococcus vogeli or echinococcus oligarthus. Until 2005, only 4 species were recognized but a 5thspecies echinococcus shiquicus has now been described in small mammals from Tibetan plateau, although its zoonotic potential is unknown.

Hydatid disease is characterized by cystic lesions occurring in different parts of body most commonly liver (65%), lungs (15%). Unusual sites of involvement include muscles (5%), bones (5%),kidney (3%), spleen (2%), diaphragm (1%), ovary (0.2%).[5-8] The peritoneal cavity, thyroid, breast, gall bladder, omentum are rarely involved.No site in body is completely immune from it except for hair, nails and teeth.The growth of cyst in liver is variable ranging from 1mm to 5mm in diameter/year.

The symptoms are mostly dependent on organ involved. Abdominal pain is the most common symptom in hepatic hydatidosis followed by palpable mass and jaundice. The liver cysts may be asymptomatic for years and occasionally spontaneous regression has been noted. More commonly the disease is slowly progressive and symptoms as well as complication may arise.

The clinical manifestations of hydatid disease of spleen are abdominal pain, enlarged spleen and fever.

Presenting symptoms and signs of renal hydatid disease are palpable mass, flank pain, hematuria, malaise, fever, low back pain.The only definitive diagnostic sign of urinary tract cystic echinococcosis is the presence of daughter vesicles in urine but this occurs in 10-20% of patients with cystic echinococcosis.

Ovarian echinococcosis symptomatology is non-specific and includes abdominal pain, menstrual irregularities, infertility and urinary disturbance.The difficulties that occur in making a correct diagnosis is due to the non specific clinical symptomatology, associated with atypical ultrasonographic and radiological images which merely show a solid ovarian mass.

Omental hydatid cyst can be asymptomatic or may cause abdominal pain,distention or present as visible abdominal mass.[9] Diaphragmatic localization is very rare with an incidence of 1% and most of these are generally associated with liver disease.

Various investigations which help in diagnosing hydatid liver apart from base line investigations are ELISA, Ultrasonography, CECT abdomen and pelvis. Differential leucocyte count for eosinophillia is found to be adjunct but not confirmatory.

Ultrasonography is the first line of radiological evaluation helpful in detecting site, size of cystic lesion with sensitivity of 85% and specificity of 89%.

Computed tomography is currently the most sensitive tool for demonstrating the finer details, extent of the lesion and complications like hydatid cyst rupture.

Extra abdominal hydatid lesions have nearly identical imaging features including the presence of cyst wall calcification, daughter cysts and membrane detachment. The combination of radiologic and serologic tests especially in patients living in endemic areas contribute to diagnosis.

Treatment of hydatid disease consists of medical, radiological and surgical. The principal treatment of hydatid cysts is surgical. However pre and post-operative courses of albendazole and praziquentel should be given in order to sterilize the cyst, decrease chance of anaphylaxis and to reduce the risk of recurrence.

Surgery remains the gold standard treatment for hydatid disease. Theaim of the surgical intervention is to inactivate the parasite, evacuate the cystalong with resection of the germinal layer, to prevent peritoneal spillage ofscolices and to obliterate the residual cavity. [10-11]

Aims And Objectives:-

1. To find out the clinical presentation of abdominal hydatid disease in adults >18 years of age.
2. Evaluation of surgical management options of abdominal hydatid disease in adults.
3. To determine the treatment outcome

Material And Methods:-

Our study was a prospective observational study conducted in Postgraduate Department of General Surgery, Government Medical College, Srinagar, J&K for a period of 2 years. This study included 30 patients after fulfilment of inclusion and exclusion criteria. Ethical clearance was obtained from institutional Ethical Committee .

Inclusion criteria:

All diagnosed cases of abdominal hydatid disease involving adult age groups requiring surgery.

Exclusion criteria:

1.All non-parasitic cysts including simple cysts.
2.Extra abdominal hydatid discase.
3.Malignant hydatid disease.
4.Recurrent hydatidosis.

Results:-

In our study, the most common age group involved in this disease was 21-30 years (50%), followed by 31-40 years (16.7%) and <20 years(16.7%). The age group of 41-50 year had a distribution of 10% and >50 years had 6.6% . The mean age in our study was 31.1±12.38 with range of 18-75years. Most of our patients were females 18 cases (60%) and males 12 cases (40%). Male: Female ratio of our study is 1:1.5.

In our study there was association with cattle in 18 cases (60%) , association with dogs was seen in 6 cases (20%) and in 6 cases (20%) no association was seen.Most of the patients were from low socioeconomic status which included house wives involved in farming 15 cases (50%), labourers in 7 cases (23.3%) followed by students in 5 cases (16.7%) and government employee in 3 cases (10.0%).

In our study majority of patients presented with abdominal pain 24 cases (80%) followed by vomiting in 5 cases (16.7%), palpable mass was found in 1 case (3.3%) and Jaundice in 1 case (3.3%) . Majority of patients had no prodormal symptom 16 cases (53.3%) followed by fever in 10 cases (33.3%), malaise was seen in 3 cases (10%)

Most common organ involved in our study is liver 28 cases (93.3%) followed by spleen in 1 case (3.3%) and kidney in 1 case (3.3%) .Right lobe of liver is most commonly involved in 20 cases (71.4%) followed by left lobe in 6 cases (21.4%) and both lobes in 2 cases (7.1%).

In our study solitary cyst was found in 25 cases (83.3%) followed by multiple in 5 cases (16.7%). Hydatid serology was done which was negative in 17 cases (56.7%) and positive in 13 cases (43.3%).

Laparoscopic hydatid cystectomy for hydatid liver was done in 10 cases (33.3%). Open hydatid cystectomy was done in 17 cases (56.7%), open hydatid cystectomy with left lateral segmentectomy was done in 1 case (3.3%). Open spleenectomy was done in 1 case (3.3%) and nephrectomy in 1 case (3.3%) as shown in table 1

Table 1:- Distribution of study patients as per type of surgical procedure.

Site	Surgical procedure	Number	Percentage
Liver	Lap hydatid cystectomy	10	33.3
	Open hydatid cystectomy	17	56.7
	Open hydatid cystectomy with left lateral segementectomy	1	3.3

Spleen	Open spleenectomy	1	3.3
Kidney	Rt. Nephrectomy	1	3.3
Total		30	100

External tube drainage for management of residual cavity was done in 16 cases (57.1%) followed by omentopexy in 9 cases (32.1%) and capitonnage in 3 cases (10.7%) as shown in table 2

Table 2:- Residual cyst management among study patients.

Residual cyst management	**Number**	**Percentage**
External tube drainage	16	57.1
Omentopexy	9	32.1
Capitonnage	3	10.7
Total	28	100

Mean duration of hospital stay was 5.1±2.79(3-12 days) with prolonged hospital stay in patients being managed by external tube drainage. In 19 cases (63.3%) duration of stay was 3-5 days , duration was 5-8 days in (23.3 %), duration was more than 8 days in (13.3%) cases as shown in table 3

Table 3:- Postoperative hospital stay (Days) among study patients.

Postoperative hospital stay (Days)	**Number**	**Percentage**
3-5 Days	19	63.3
5-8 Days	7	23.3
> 8 Days	4	13.3
Total	30	100
Mean±SD (Range)=5.1±2.79 (3-12 Days)		

Majority of complications in our study occurred in external tube drainage group . Wound infection was seen in 4 cases (25%) followed by infection of residual cavity in 3 cases (18.8%) and recurrence in 1 case (6.3%) . Recurrence occurred in 1 case of omentopexy (11.1%). Wound infection occurred in one case of capitonnage (33.3%) as shown in table 4

Table 4:- Postoperative complications according to residual cyst management.

Postoperative complications	**External tube drainage**		**Omentopexy**		**Capitonnage**	
	No.	**%age**	**No.**	**%age**	**No.**	**%age**
Wound infection	4	25.0	-	-	1	33.3
Infection of residual cavity	3	18.8	-	-	-	-
Prolonged drainage	1	6.3	-	-	-	-
Cysto biliary communication	1	6.3	-	-	-	-
Recurrence	1	6.3	1	11.1	-	-
Overall	10	62.5	1	11.1	1	33.3
P-value	External tube drainage vs Omentopexy		Omentopexy vs Capitonnage		Capitonnage vs External tube drainage	
	0.013*		0.455		0.043*	

***Statistically Significant Difference (P-value<0.05)**

Discussion:-

Our study included 30 patients after fulfillment of inclusion and exclusion criteria. The patients were followed for a period of 6 months. In our study majority 15 patients (50%) belonged to 21-30 year age group followed by 5 patients (16.7%) which belonged to 31-40 year age group, 5 patients (16.7%) which belonged to <20 year age group, 3 patients (10%) belonged to 41-50 year age group and 2 patients (6.6%) belonged to >50 year age group. The mean age of patients in our study was 31.1±12.38 with youngest patient being 18 years of age and eldest 75 year of age.

Females outnumbered males with 18 (60%) females in comparison to 12 (40%males). Male female ratio in our study is 1:1.5.

Our study was compared to ***Mehta Rb et al*** (1982)[12] in which commonest age group was 21-30 years (27%) followed by 31-40 years (18.8%). ***Mehta Rb*** had slight male predominance 56.3% males and 43.7% females. ***Venukumar*** (2017)[13] conducted a study in which most common age group affected was 25-29 years (50%) followed by 35-39 years (46.7%) and then 30-34 years (3.3%). In relation to sex males constituted 46.7% and females 53.3%. This signifies that hydatid disease distribution is seen in all age groups but less likely in younger age <18 years due to its slow growth. There exists a wide variation in sex distribution due to difference in life style, geographical factors. Female predominance in our study could be explained by their involvement in agricultural and cattle rearing activities. Also majority of females in our study are housewives and are involved in domestic affairs.

In our study, history of contact with cattle was present in 18 cases (60%), dogs in 6 cases (20%). There was no contact with dogs or cattle in 6 cases (20%).In a study conducted by ***Sibal RN et al*** (1974) history of contact with dogs or cattle was seen in 32.6% of cases. Our study was comparable to ***Bhobhate Sk et al*** in which 49.4% of patients gave history of contact with dogs and cattle. This variation in study is due to small sample size of 30 cases. Presence of contact with pets is an important risk factor which plays important role in etiopathogenesis of disease. Poor personal hygiene, use of unwashed vegetables, low socioeconomic status is an alternative mode of transmission of hydatid disease.

Most of patients in our study were from low socioeconomic status which included housewives involved in farming, labourers. Housewives involved in farming were 15 cases (50%) followed by labourers 7 cases (23.3%). ***Upadhaya GH et al (***1974) also reported that most patients in his study were farmers with low socioeconomic status.

The most common presentation of our study was abdominal pain in 24 cases (80%) followed by vomiting in 5 cases (16.7%), palpable mass in 1 cases (3.3%), and Jaundice 1 case (3.3%) . Prodormal symptoms like fever were present in 10 cases (33.3%) followed by malaise in 3 cases (10%). In 16 cases (53.3%) no prodormal symptom was seen. Our study was comparable to ***Ahmet A et al*** (1999)[14] having 74% patients with abdominal pain and 55% with lump***. Yadaw RVS et al*** (1989) showed lump in 85.7% followed by pain in abdomen (61.4%). The variation might be due to the fact that most people in our state (Kashmir) judiciously use analgesics and consult doctors late.

In our study most common organ involved is liver in 28 cases (93.3%) followed by Kidney in 1 case (3.3%) and 1 case of spleen (3.3%). ***Baran et al(***1995) conducted a study in which liver was common organ involved 65% followed by lungs 15%, spleen 2%, Omentum was rarely involved.

In our study showed right lobe harboured cyst in 20 cases (71.4%) followed by left lobe 6 cases (21.4%) and both lobes in 2 cases (7.1 %) . This was comparable to study by ***Yadav RVS et al(***1989) 65% cyst were in right lobe and 18% left lobe. ***Ahmet A et al***(1999) study revealed 78% were in right lobe and 13% left lobe. Thus our study is comparable to others and comes to conclusion that right lobe is involved commonly.

In our study USG was done that revealed 25 cases (83.3%) had single cyst and 5 cases (16.7%) had multiple cysts. ***Venukumar R*** (2017)revealed 93% had single cyst and 7% multiple cyst.

Our study showed hydatid serology was Positive in 13 cases (43.3%) and negative in 17 cases (56.7%). It was comparable to ***Sarkari BS et al*** (2010) in which serology was positive in 40% and negative 60% cases. Serological assay has a complementary role to imaging. Low sensitivity and specificity is seen. Also lacks of standardization of immune diagnosis assay contribute to discrepancy in results in different laboratories.

All patients in our study were treated surgically. Laparoscopic hydatid cystectomy for hydatid liver was done in 10 cases (33.3%) and in 17 cases (56.7%) cases open hydatid cystectomy was done. Open hydatid cystectomy with left lateral segmentectomy was done in 1 case (3.3%) . In my study i encountered 1 case of hydatid spleen and 1 case of renal hydatid. Splenectomy was done in 1 case (3.3%) and nephrectomy in 1 case (3.3%). Our study had 28 cases of hydatid liver in which residual cavity was managed by external tube drainage in 16 cases (57.1%), 9 cases (32.1%) omentopexy was done and capitonnage in 3 cases (10.7%) . Study by ***Ahmet A et al***shows 40% underwent external drainage and 13.2% underwent omentopexy. On comparison we found that management of residual cavity with external tube drainage was common procedure adopted to deal with pathology.

In our study group 1 (External tube drainage) wound infection was seen in 4 cases (25%) which was comparable to ***Xynos (1991) et al***study where wound infection was seen in 12.2% cases. Infection of residual cavity was seen in 3 cases (18.8%) compared to Sozen[57] et al (2011) (12.5%). Prolonged drainage, CBC, recurrence was seen in 1 case each (6.3%) . Our study was comparable to ***Ahmet et al*** (1999)where CBC was seen in 8.2% and recurrence in 5.9% cases. Wound infection was higher in group 1. Tubes may introduce infection from external environment into body. Wound infection in our study was treated by daily dressings and antibiotics after culture sensitivity. In our study patients with infection of residual cavity had prolonged drainage of pus from tube.

Our study group 2 (Omentopexy) had recurrence in 1 case (11.1%) which was comparable to ***Ahmet et al***(1999)[14] in which recurrence was seen in 6% cases. Wound infection, CBC was absent in this group. It is due to excellent absorption and sealing property of omentum decreasing chances of post operative biliary leak. Omentum helps in healing of raw surfaces, resorption of serosal fluid and attracting macrophages to septic foci.

Our study group 3 (Capitonnage) had wound infection in 33.3% cases comparable to ***Xynos et al***where wound infection was seen in 20% cases.

In our study complications were more frequent in external tube drainage group ($P<0.05$) as compared to omentopexy ($P>0.05$). Our study was comparable to ***Ahmet A et al*** (1999)[14] where significant complications occurred in external tube drainage group ($P<0.05$).

Mean duration of hospital stay in our study was 5.1 ± 2.79 (3-12 days). Absence of additional tube drain helped in early ambulation and early discharge of omentopexy group patients. Hospital stay was prolonged in patients being treated by external tube drainage in comparison to ***Ahmet A et al*** (1999)[14]

Conclusion:-

Hydatid disease can occur in any age group but is seen most commonly in middle age , females, patients belonging to low socioeconomic status and involved in farming. Low socioeconomic status, agricultural activities and association with dogs or cattle were risk factors for the disease. Absence of history of contact with cattle or dogs doesn't rule out the possibility of disease. Liver is most common organ involved. Right lobe is commonly involved. Abdominal pain was the most common presenting complaint. Surgery is the gold standard for manangement of hydatid disease. Residual hepatic hydatid was treated with external tube drainage, omentopexy, capitonnage. Wound infection and infection of residual cavity were common complications encountered in post operative period and majority of them belonging to external tube drainage group. Hospital stay was prolonged in external tube drainage group. There was no mortality observed in our study.

Since the number of cases in our study were only 30, a further study with more number of cases is required to give further suggestions for the evaluation and management in our setup

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