

The Role of Wide Pore Drain in Successes of Spontaneous Closure of the Cysto- Biliary Fistula after Hydatid Disease of The Liver

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Abstract

This study to determine the role of wide pore use up in successes of spontaneous closure of cystic- biliary fistula after surgery of liver hydatid disease and decrease the postoperative morbidity. The study was conducted in AL-Zahra teaching hospital from May 2006 until May 2014. On 134 patients undergo surgery operation used for the liver hydatid cyst, complain of drain amount produced reliable with a biliary form and a bilirubin level elevated compared with serum bilirubin level after fifth postoperative day, patients were divided based on the presence of wide pore drain (64 patient) group A or classical drain (70 patient) group B. Sex, age, length of hospital stays, drain output, postoperative intervention relationship between cyst diameter and time for fistula to close spontaneously recurrence, and mortality were compared among both group, In group A, meantime for spontaneous fistula closure was 12.3 days, no recurrence or death reported, while in group B, meantime for spontaneous fistula closure was 17 days. There were three patients (4.3%) recurrence after one year follows up. There was one old female patient (1.4%) died.

Key words: Cysto billiary fistula CBF, Hydatid Cyst HC, Echinococcus Granulosis EG, Echinococcus Multilocularis EM, Wide Pore Drain WPD.

Introduction

Hydatid cyst is one of the oldest known diseases in humans. It was first illustrated in the Talmud as a result of a bladder filled with water and Hippocrates (379 BC) illustrated it as a liver filled with water. Hydatid disease is an epidemic disease in Iraq, and many Mediterranean countries and lead to disasters in health, economic and social. Iraq now is one of the most epidemic areas of this disease¹². Hydatid cyst is a worldwide infection caused by the larva's state of parasite.

It belongs to the category of tapeworms named Echinococcus³⁴. The areas where sheep and cattle breeding are the most epidemic in the world with parasitic worms especially South Australia, New Zealand, the northern part of Africa and some South American countries, as well human infections occur regularly in the European continent, Siberia, Mongolia, northern China, southern Japan, Vietnam, Philippines, Syria, Lebanon, Iraq, and Saudi Arabia⁵⁶. Hydatid disease is a health, social and economic problem in the countries of the Eastern Sea Region.

The prevalence of infection is common in these areas because dogs are widely used in the care of cattle and sheep and have direct contact with humans, which leads to the continuation of the chain of infection which includes dogs and sheep as well as cattle, camels, goats and other animals (carnivores)⁷⁸. In Iraq, the disease is epidemic and is a serious health problem, especially in the central regions between the Euphrates and the Tigris, these areas are inhabited by many producing farmers for grains and breeders for sheep as well as the presence of catalysts for the spread of hydatid disease such as lack of cleanliness and the presence of the middle host⁹.

Female was higher than male patients¹⁰, the main surgical occurrence was present in the 41–50 years age⁸⁹¹². The liver in males and females was more frequent site concerned than further organs and lung is next²⁷⁸⁹. Since a best management, surgery was considered to be not dangerous, on the other hand minor and major problems speeds were written 32.2% and 25.0%, correspondingly, with a transience rate of 0.71%¹⁴. Cystobiliary statement is the majority frequent

and difficult problem¹³. although these communication that under high pressure, may result in biliary obstruction, fistula, infection cholangitis, elevated bilirubin, elevated ALP levels and secondary biliary cirrhosis^{15 1617}, but the majority communication are occult in environment, and patients could stay clinically silent in the majority cases, with no any specific conclusion being noticed in the pre-operative develop and just being exposed through or next surgery¹⁸.

Material and Method

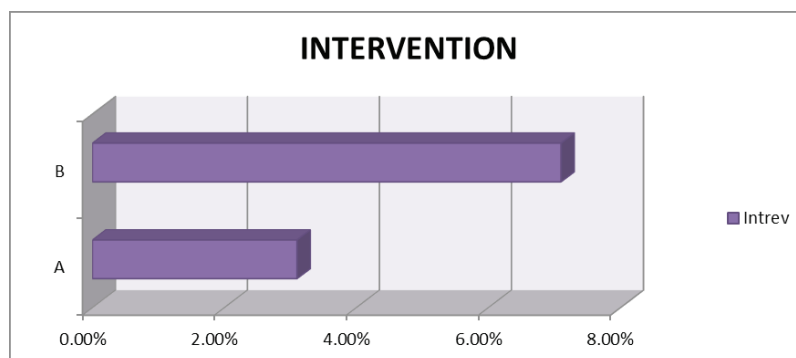
Between May 2006 and May 2014, five hundred and one persons undergo surgery for liver hydatid cyst in Al-Zahra teaching hospital and Alkarama hospital in Al-Kut-Iraq. All persons undergo a complete blood cell (CBC) count and tests of liver function (LFT), fasting blood sugar (FBS), an abdominal ultrasonographic exam, chest radiography, were performed for all persons. Patients with gall stone, common bile duct stone and jaundice were excluded from the study.

The type of surgical procedure performed was laparotomy, packing the operative field with sponges soaked in 10% povidone iodine as scolicidal and injection of 10% povidone iodine to the cyst cavity, partial cystectomy with scolieses and endocyst removal leaving pericyst and washing with 10% povidone iodine swab then tube drain inserted in the cyst and closed, there are two type of drain wide pore drain 32f-36f and classical drain 22f-26f, we use one drain for each patient randomly. Anyone from those five hundred and one patients complain of drain production reliable with a biliary form and bilirubin level upper than plasma bilirubin level after fifth postoperative day were included in this study and they are 134 patients. Persons were divided based on the presence of wide pore drain 32f-36f (64 patient) group A or classical drain 22f-26f (70 patient) group B.

Postoperative follow up of both group were done and a comparative study regarding, Sex, Age, length of hospital stays, drain output, postoperative intervention, relationship between Cyst diameter and time for fistula to close spontaneously recurrence, and mortality were compared among both group, non compliance patient and patient with bad follow up were excluded from study

Finding

The 64 patients (group A) 10 (15.6%) were male, and 54 (84.4%) were female. The median age was 42 years (range 16-74 years). The mean hospitalization time was 7 days, the mean daily drain output was 250ml. Intervention need in, two female (3.1%) patient as catheter placement under USG regulation to control the biliary collection due to slipping of drain. The cyst diameter ranged from 5 cm to 20 cm (median, 9.0 cm), mean time for spontaneous fistula closure was 12.3 days, no recurrence or death reported in this group. Of the 70 patients [group B, 15 (21.4%) were male, and 55 (78.6%) were female. The median age was 46 years (range 19-76 years). The mean hospitalization time was 9 days, the mean daily drain output was 450ml. Intervention need in 5 patients (7.1%) 4 female and one male required catheter placement under USG guidance to control the biliary collections that were not adequately drained and obstructed, The median cyst diameter was 9.5 cm, mean time for spontaneous fistula closure was 17 days. There were three patients (4.3%) 2 female and one male recurrence after one year follow up. There was one old female patient (1.4%) deaths in this group due to biliary collections with subsequent sepsis. A comparative study regarding sex, age, length of hospital stays, postoperative intervention, relationship between cyst diameter and mortality were compared among both group and shown in the figures and tables below.

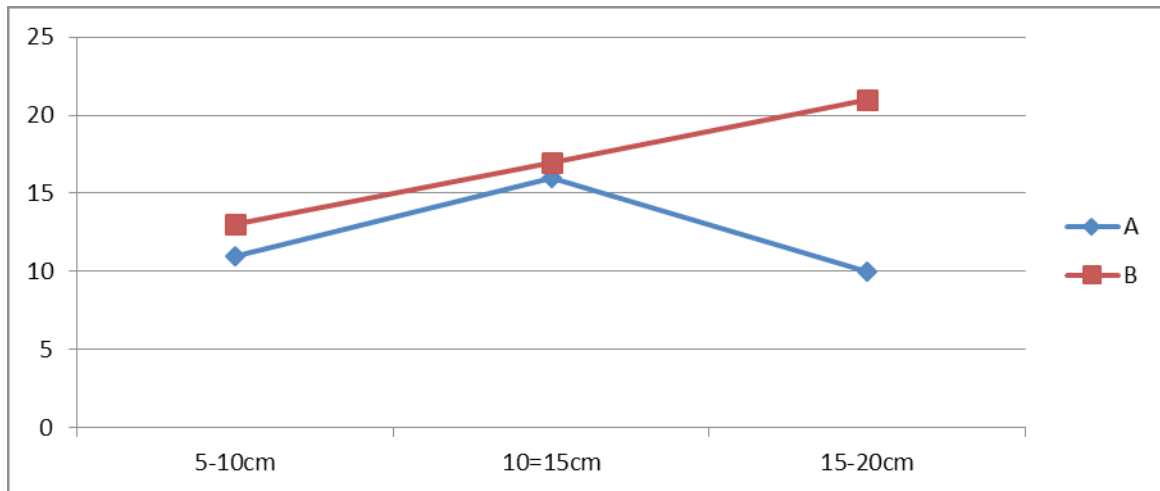


Figure(1): The Intervention need in group A and B.

Table (1): The relation between cyst diameter and median time for closure of fistula in group A and B.

CYST DIAMETER cm	Median TIME for close in A GROUP	Median TIME for close in B GROUP
5-10	11	13
10-15	16	17
15-20	10	21

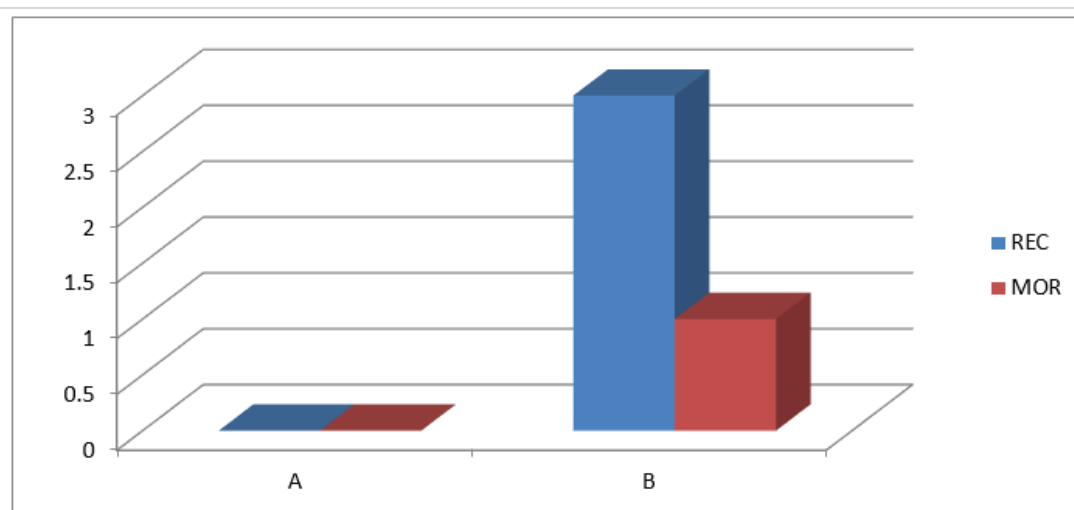
The relation between cyst diameter and median time for closure of fistula study found that larger cyst in group A closed earlier than middle and even small cyst while in group B study found that the time was proportional to the cyst size



Figure(2):The relation between cyst diameter and median time for closure of fistula in group A and B

Table (2): Time for spontaneous fistula closure in group A and B.

days	A	B	Total No.(%)
5-10	4(6.3)	6(8.6)	10(7.5)
10-15	23(35.9)	13(18.6)	36(26.9)
15-20	14(21.9)	6(8.6)	20(14.9)
20-25	11(17.2)	8 (11.4)	19(14.2)
25-30	5(7.8)	16(22.9)	21 (15.7)
30-35	3(4.7)	12(17.1)	15(11.2)
35-40	2(3.1)	4(5.7)	6(4.5)
40-M 45	2(3.1)	5(7.1)	7(5.2)
Total	64(100)	70(100)	134(100)



Figure(3):Recurrence and Death of patients in group A and B.

Discussion

Postoperative hydatid biliary communication could effect in many morbidity and mortality¹⁹, hydatid fistulae were described to be high resistant and not often stopped spontaneously. In spite of pre-operative and operative attempt to avoid this problem, most communication are occult in nature and appear after surgery.

In our series ,postoperative cystic- biliary fistula occurred in 134 (26.7%) patients compared to 31% reported by Langer et al¹ ,women was affected more than men,109 patients(81.3%) and 25(18.7%) respectively, this confirming that most of hydatid cysts states between the housewives that present by many other researchers²⁰, on the other hand, elevated occurrence of the disease between housewives could be because of their close contact with infected dogs and most of them were from rural and agriculture area. The highest median age prevalence was 42 years in group (A) and 46 years in group (B), it is usually conventional that the majority of hydatid cysts are obtained in childhood, but could get several years to obvious themselves as harmful lesions²⁵ hospital continue was more in group (B) compared with group A (9 vs 7 days) due to fever and wound infection in group (B) ,whilst the lowest was with group (A) indicating that wide pore drain is safer than classical drain and smooth postoperative days .Kemal et al reported anaphylactic shock and high fever and cholangitis and morbidity up to 10 % in persons with liver hydatid disease²¹ .

The mean daily drain output was higher in group (B) compared with group (A) (450ml vs 250ml) Zeybek N et al show a postoperative biliary drainage volume less than 100 ml selected the only important forecaster of impulsive conclusion²². The Intervention need in group (B) was 7.1% (5) patients (%) 4 female and one male requisite catheter site under USG control to manage the biliary collection that were not sufficiently drained and obstructed while 3.2% in (A) as two female patient need catheter site under USG control to manage the biliary collections due to slipping of drain, drain slipping occur due to large drain diameter and can be solved by frequent suturing of drain.

Drain slipping and unavailability of wide pore drain are the most two deteriorating factor that we in faces in our study Some study intervention with ERCP sphincterotomy and the puncture, aspiration, injection and re aspiration (PAIR) procedure²³ In This study about 35.9% of fistula closed within 10 -15 days in group (A) while only 26.9% in group (B), and 4.7% only need more than one month to close in group (A) while 17.1% in B. The relation between cyst diameter and median time for closure of fistula we found that larger cyst in group (A) closed earlier than middle and even small cyst while in group (B) we found that the time was proportional to the cyst size, this can be attributed to Bernoulli's principle and Poiseuille's law on our drain and use 36 French instead of 22 French there will be more flow of drainage and decrease in intracystic pressure and decrease in surface tension this will lead to early fistula closure,

and decrease the postoperative morbidity, also can be attributed to that high intraabdominal pressure on rapid empty cyst cavity lead to collapsing the cyst early and blockage of fistula.

The reappearance speed was 4.3% in group (B), but zero in group (A) more than the similar time of ordinary postoperative follow up, this might be considered as evidence that wide pore drain is much more effective than classical drain these attributed to that communicate through the biliary structure, resultant in an increasing disease of the cyst contents and bacterial super infection could destroy the parasite and wide pore drain allow good drainage of missed small scoliosis the recurrence rate in most literature did not exceed 10 %²⁴. In this study, Postoperative mortality was 1.4% in group (B) and zero in group (A). Which near the literature that stated as 1-3%,²⁴ so reduction in postoperative mortality also can be achieved.

Conclusion

According to Bernoulli's principle and Poiseuille's law on our drain and use 36 French instead of 22 French there will be more flow of drainage and decrease in intracystic pressure and decrease in surface tension this will lead to early fistula closure, and decrease the postoperative morbidity and mortality.

Security permits: clearance was taken from a government hospital in wasit province with the knowledge of the government administration and patients.

Ethical statement of the subject of research came with the approval of the doctors supervising the condition of their patients in addition to the reviewers to follow up their healthy condition throughout the research period.

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