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Research Article

Peritoneal paracentesis in acute abdomen: descriptive clinical study

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ABSTRACT

Background: Peritoneal paracentesis is a safe procedure even in cases of intestinal obstruction, where there is a chance of puncturing the bowel. Many clinical studies have shown the safety of abdominal paracentesis in intestinal obstruction.
Methods: All patients who present with acute abdomen including blunt trauma to abdomen and post-operative cases are included for study and those who give consent for study. A total of 50 cases were studied during the period.
Results: In the present study of 50 cases, we could aspirate the characteristic fluid in all 50 cases. The most common type of fluid we aspirated was bilious in 27 cases. Hemorrhagic fluid in 08 cases, feculent in 03 cases and purulent fluid was seen in 08 cases.
Conclusions: Peritoneal tapping is a diagnostic aid in acute abdomen.

Keywords: Paracentesis, Acute abdomen, Peritoneal tapping

INTRODUCTION

Though diagnostic paracentesis has been used for a long time, recordings of its use are available only from the last 100 years. Solomon was the first person to describe the technique of abdominal paracentesis in 1906. He passed a ureteral catheter through a small trocar into the peritoneal cavity to obtain a sample of peritoneal fluid. He described this procedure as a "useful one".[1]

The first comprehensive study of the technique was carried out by Neuhof and Cohen who reported its use as a diagnostic aid in the evaluation of closed abdominal injuries, acute pancreatitis and primary pneumococcal or streptococcal peritonitis.[2]

Accuracy of the procedure was investigated experimentally in 1960. Observation in dogs showed that there is a linear relation between the amount of fluid in the peritoneal cavity and probability of obtaining a sample by needle paracentesis. A volume of 500 ml of free fluid in the peritoneal cavity expected to give a 78% positive paracentesisis.[3]

Peritoneal paracentesis is a safe procedure even in cases of intestinal obstruction, where there is a chance of puncturing the bowel. Many clinical studies have shown the safety of abdominal paracentesis in intestinal obstruction. In 1954 a study was conducted experimentally on dogs, where an isolated loop of segments of intestine was deliberately punctured and subsequently inflated. They found no leakage until a pressure of 260 mmHg was reached, whereas intraluminal pressure seldom rises above 15 to 20 mm of Hg in intestinal obstruction. Therefore the chance of leakage from accidental puncture is very small.[4]

METHODS

In this cross sectional study, all patients with inclusion criteria attending to department of surgery VIMS medical hospital Bellary, India from December 2010 to December 2011 is included.

Study subjects

Patients with inclusion criteria admitted/attending to department of surgery are studied.

Inclusion criteria

All patients who present with acute abdomen including blunt trauma to abdomen and post-operative cases are included for study and those who give consent for study.

Exclusion criteria

- All pregnant patients.
- All patients suspected of acute intestinal obstruction.
- All patients with extensive abdominal scar.
- All patients with acute non perforative biliary tract disease.
- All patients with renal or ureteric calculi.
- All patients with diagnosed coagulation disorders.

A total of 50 cases were studied during the period.

RESULTS

Table 1: Age incidence.

Age group in years	No. of cases	Percentage
1-10	7	14
11 – 20	4	8
21 – 30	13	26
31 – 40	10	20
41 – 50	7	14
51 – 60	8	16
61 – 70	1	2

Ages between 21-30 years were the most common in our present study. Out of 50 cases 13 were from this age group. Next common age group was between 31-40 years, which constituted 10 cases followed by 51-60 age groups, which constituted 8 cases.

The most common symptom in our study was pain abdomen, present in all 50 cases followed by distension in 30 cases (78.00%), vomiting 29 cases (58.00%) and least being constipation in 22 cases (44.00%).

In the present study majority (48) of cases presented with tenderness and Guarding. Rigidity was noted in 46 cases, and liver dullness was obliterated in 33 cases. Tachycardia was noted in 23 cases. Diagnosis of shock was made in 16 cases.

Initially the procedure was carried out in the right lower quadrant in all 50 patients, of which 46 were positive and tap was not repeated. In remaining 4 cases, tap was negative in right lower quadrant hence tap repeated in right upper left lower and left upper quadrant. Tap was negative in all quadrants in these 4 cases (Table 2).

Table 2: Site of the positive tap.

Site of the tap	No. of tap performed	Positive	Negative
Right lower quadrant	50	46	4
Right upper quadrant	4	0	4
Left upper quadrant	4	0	4
Left lower quadrant	4	0	4

Table 3: Nature of the aspirated fluid.

Nature of the aspirated fluid	No. of cases	Percentage
Bilious	27	54
Hemorrhagic	8	16
Feculent	3	6
Purulent	8	16

In the present study of 50 cases, we could aspirate the characteristic fluid in all 50 cases. The most common type of fluid we aspirated was bilious in 27 cases. Hemorrhagic fluid in 08 cases, feculent in 03 cases and purulent fluid was seen in 08 cases.

Table 4: Odour of the aspirated fluid.

Odour of the aspirated fluid	No. of cases	Percentage
Odourless	35	70
Purulent foul	8	16
Feculent	3	6

In cases of positive taps, we noticed odourless fluid in 35 cases, purulent foul smell in 08 cases and feculent odour in 03 cases.

DISCUSSION

In the present study, we performed abdominal tap in 50 patients but never encountered bowel puncture. This was probably because of exclusion of patients with intestinal obstruction and multiple abdominal scars from our study. The procedure was easy to perform and hardly took 5 minutes. All that is required was a disposable syringe with wide bore needle. In the present study, we used 18 or 20 gauge or blood transfusion needle with 5cc disposable syringe. In the literature different authors had used variety of needles.

In our present series, acute abdominal disease was more common in the male sex. 37 out of 50 cases were male

accounting for 74.00% and 13 were females accounting for 26.00%. Males dominated in the blunt trauma abdomen. This is probably because of active involvement of males in day to day life and high incidence of trauma under the influence of alcohol. Positive tap reported in the literature ranges from 52-100%. In the present series we got the positive tap in 46 out of 50 cases with an accuracy of 92.00%. This positive rate is in close confirmation with the observation made by other workers.

- Rao SPS performed a study on 100 cases and their positive tap rate was 81.00%.[5]
- Trivedi DR et al in their series of 70 cases had positive taps in 57 cases amounting to 81.00%.[6]
- Khan M in their series of 56 cases had 46 positive tap amounting to 82.14%.[7]
- Baker WN in an unselected series of 101 patients, found positive results in 83%.[8]
- Lamke LO did a study on 114 patients with a positive rate of 90%.[9]
- Sloop RG reported 94% positive rates in his study of 65 cases.[10]
- McPartlin JF in his study on 100 cases had positive rate of 67%.[11]
- Giacobine JW performed diagnostic paracentesis in 130 patients with a positive rate of 82%.[3]
- Prout WC had 72% positive rate in his study.[12]
- Majority of cases in our series was in non-traumatic acute abdomen. 37 out of 50 cases were in this group, accounting for 74%. Peritoneal paracentesis was positive in 35 cases accounting for 94.00%. Approximately similar reports have been published in the literature.
- Baker WN reported accuracy of diagnostic tap in 80% of cases with perforated duodenal ulcer or gastric ulcer.[8]
- Similar reports have been reported by Singh J and Thate R et al.[13]
- Rao TN obtained 100% positive results in gastrointestinal perforation.[14]
- Mahantha showed 76.47% positive tap in non-traumatic acute abdomen.[15]

CONCLUSION

Our study reestablishes the simplicity, safety and accuracy of peritoneal tapping as a diagnostic aid in acute abdomen.

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Conflict of interest: None declared
Ethical approval: The study was approved by the institutional ethics committee

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