

EPIDEMIOLOGY AND SYMPTOMATOLOGY OF EXUDATIVE AND TRANSUDATIVE TYPE OF ASCITES IN HOSPITALIZED PATIENTS

HAFIZ MUHAMMED ASLAM*, SHAFIQ SALEEM,
ARSALAN AHMAD ALVI AND SYED SAUD HASAN

Department of Pharmacology, Dow Medical College, Karachi

ABSTRACT:

Ascites is the pathological accumulation of fluid in the peritoneal cavity, associated with many clinical symptoms and had various causes. The descriptive observational study was carried out in admitted patients of Civil Hospital Karachi from April 2011 to June 2011. This study was conducted to determine the frequency of major causes and important clinical findings in Ascitic patients. All the admitted patients in medicine wards with the presentation of Ascites were included in this study. The data was collected on a Proforma having questions regarding basic patient information, laboratory reports, result of clinical examination and clinical findings. Verbal informed consent was taken and confidentiality was maintained. A total of eighty eight (88) ascitic patients of mean age 50.75 ± 15.845 , were evaluated during three months. It was slightly more common in females as compared to males. Most common fluid present in the peritoneal cavity was of transudative type as compare to exudative fluid. Common causes of Ascites were Hepatitis C (53.4%), Hepatitis B (15.9%), chronic renal failure (4.5%) and T.B peritonitis (2.3%). Major co-morbid symptoms of ascitic patients were abdominal pain (52.3%), fever (47.7) and altered level of consciousness (36.4%). Data entry and analysis were done through SPSS 19. A large number of cases of Ascites were due to Hepatitis C and Hepatitis B. For the management of these diseases media and NGOs should come forward and create the awareness regarding these deadly problems.

Keywords: Ascites, Transudative, Exudative, Albumin gradient.

INTRODUCTION

Ascites is a Greek term "ASKOS" which refers to a bag or sac (Doddamani *et al.*, 2010). It is the pathological accumulation of fluid (Al-Kanwy 1997). The main factor contributing to Ascites was splanchnic vasodilatation which occurs due to increased hepatic resistance to portal flow. It leads to the development of portal hypertension which increases the production of local vasodilator, mainly nitric oxide, leading to splanchnic vasodilatation. The combination of portal hypertension and splanchnic arterial vasodilatation alters intestinal capillary

pressure and permeability, facilitating the accumulation of fluid within the abdominal cavity (Gines *et al.*, 2004). A normal peritoneal cavity contains no fluid, although in women a small amount 20 ml or less than 1 ounce can occasionally be found depending on the menstrual cycle (Ascites-1) but for the presence of Ascites, it is essential that at least 1500 ml of fluid present in peritoneal cavity and also detectable by clinical examination but significantly more in obese person (Ascites-2).

Several Arabian, American, South Asian and local studies shows that the main cause of Ascites were Hepatitis C, Hepatitis B,

Cryptogenic cirrhosis, Hepatocellular carcinoma, Chronic renal failure, lymphoma, Nephrotic Syndrome, cryptogenic Ascites chylous Ascites, eosinophilic Ascites Wilson's disease, Pancreatic Ascites T.B peritonitis, Spontaneous bacterial peritonitis and malignancies like breast cancer, gastrointestinal cancer, ovarian cancer, peritoneal cancer, gall bladder cancer, renal cancer, pancreatic cancer, prostatic cancer and thyroid cancer (Doddamani *et al.*, 2010; Al-Kanwy 1997; Saif 2005; Mahmood 2009; Khan 2007; Shaikh *et al.*, 2010; Cameron *et al.*, 1976 and Ayantunde and Parsons 2007).

It is seen in many local and international studies that the division of ascitic fluid into Transudative and exudative was done on the basis of Serum Ascitic Albumin Gradient (SAAG). If the SAAG was >1.1 g/dl then it was called high gradient Ascitic Fluid or Transudative fluid and if SAAG was <1.1 g/dl then it was called Low gradient Ascitic fluid or exudative fluid (Al-Kanwy 1997; Khan 2007 and Shaikh *et al.*, 2010).

Several Turkish, South African and local studies reveal that the major co-morbid of ascitic patients were fever, abdominal pain, night sweats, weight loss, abdominal swelling, palmer erythema and clubbing (Manohar *et al.*, 1990; Vardareli *et al.*, 2004 and Qureshi *et al.*, 2001).

Our research study investigates that what were the main causes of Ascites in Pakistan especially in Karachi; it also investigates which type of fluid mostly present in ascitic patient and also investigates the major clinical finding of ascitic patients.

The main purpose of finding out the major causes of Ascites and clinical findings that were associated with it was that they could be managed more properly and given effective treatment accordingly. Another purpose of conducting research was that there has been no recent study conducted on this topic in

Pakistan, so this will give update on the recent data regarding Ascites.

Methodology:

It was descriptive observational study, conducted in all six medicine wards of Civil Hospital Karachi, during the period of April 2011 to June 2011. Data was collected from the admitted patients in the medicine wards with the diagnoses of Ascites. Performa was designed having questions regarding age, gender, result of abdominal examination, presenting complains, cause of Ascites and result of laboratory analysis report. Clinical examination of patients included the method of shifting dullness and fluid thrill. Laboratory analysis report of the ascitic fluid contains the value of serum albumin gradient. If serum albumin gradient was > 1.1 g/dl then it was called the Transudative fluid and if albumin gradient was < 1.1 g/dl then it was called Exudative fluid. Collected data was recorded in Performa. It has been entered and analyzed through SPSS version 19.

RESULTS AND DISCUSSION

A total of eighty eight ascitic patients were evaluated, in which forty three (48.9%) were males and forty five (51.1%) were females. Their ages were between 15 years and 86 years with a mean age were 50.75 ± 15.845 .

Abdominal examination of all patients was positive. Out of total eighty eight patients, 53.4% patients had Hepatitis C, 15.9% had Hepatitis B, and 4.5% had chronic renal failure. Seventy seven (87.5%) patients have Transudative type of fluid in their peritoneal cavity while eleven (12.5%) patients have exudative type of fluid (Table 1).

The data was compiled, analyzed and it was concluded that there were more people having Ascites, they were age 35 or above, to divide our result into two groups to make our data look more organized and meaning full. The two age groups were 35 years below and the age 35 years and above. We made our

calculations by considering each group as 100%.

Sixty nine patients were included in the age group of thirty five and above, in which thirty three (47.8%) were males and thirty six (52.2%) were females. Major causes of Ascites in this age group were Hepatitis C 58%, Hepatitis B 14.5%, and chronic renal failure 5.8%. Out of these sixty nine patients, Sixty two patients have Transudative fluid in their peritoneal cavity and seven patients had exudative fluid in their peritoneal cavity (Table 1).

Nineteen ascitic patients were in the age group of below thirty five years .Ten (52.6%) were males and 9 (47.4%) were females. Major causes of Ascites in this age group were Hepatitis C 36.8%. Hepatitis B 21.1%, Hepatitis B and D 10.5%, T.B peritonitis 10.5%. Out of these nineteen patients, fifteen patients had Transudative fluid while four patients (21.1%) had exudative fluid in their peritoneal cavity (Table 1).

On the basis of type of fluid, we also divided our data into two groups Patients having Transudative type of fluid and patients having exudative type of fluid. We made our

Table 1
Laboratory findings and Causes of ascites

Variables	Below 35 years (n=19)	Age 35 and above years (n=69)	Total (n=88)
Sex			
Males	10(52.6%)	33(47.8%)	43(48.9%)
Females	9(47.4%)	36(52.2%)	45(51.1%)
Laboratory Findings			
Exudative fluid	4 (21.1%)	7 (10.1%)	11(12.5)
Transudative fluid	15 (78.9%)	62 (89.9%)	77(87.5%)
Causes			
Hepatitis C	7 (36.8%)	40 (58%)	47 (53.4%)
Hepatitis B	4 (21.1%)	10 (14.5%)	14 (15.9%)
Hepatitis B and C	-	2 (2.9%)	2 (2.3%)
Hepatitis B and D	2 (10.5%)	-	2 (2.3%)
Cor pulmonale	-	2 (2.9%)	2 (2.3%)
Pyelonephritis	-	1 (1.4%)	1 (1.1%)
Chronic renal failure	-	4 (5.8%)	4 (4.5%)
T.B. Peritonitis	2 (10.5%)	-	2 (2.3%)
Hepatic encephalopathy	1 (5.3%)	4 (5.8%)	5 (5.7%)
Hepatocellular carcinoma	1 (5.3%)	1 (1.4%)	2(2.3%)
T.B. Intestinalis	-	3 (4.3%)	3 (3.4%)
Congestive cardiac failure	-	1 (1.4%)	1 (1.1%)
Bacterial peritonitis	1 (5.3%)	-	1 (1.1%)
Cholestasis	-	1 (1.4%)	1 (1.1%)
Pancreatitis	1 (5.3%)	-	1 (1.1%)

Results were evaluated by considering each column (group) as 100%

calculations by considering each group as 100%. Transudative type of fluid was seen in the patients of Hepatitis C (61%), Hepatitis B (18.2%), Hepatic encephalopathy (6.5%) and Chronic Renal failure (3.9%) (Table 3).

Exudative type of fluid was seen in the patients of Intestinal T.B (27.3%), Cor

Pulmonale (18.2%), T.B peritonitis (18.2%) and Pancreatitis (9.1%) (Table 3).

Out of total eighty eight patients, co-morbid symptoms include: 52.3% patient had abdominal pain, 47.7% had fever, and 36.4% patients had altered level of their consciousness (Table 2).

Table 2
Co-morbid and clinical findings

S. No.	Clinical findings	Frequency	Percentage
1.	Abdominal Pain	46	52.3%
2.	Fever	42	47.7
3.	Altered Level Of Consciousness	32	36.4%
4.	Pedal edema	19	21.6%
5.	Constipation	18	20.5%
6.	Hematemesis	16	18.2%
7.	Oliguria	9	10.2%
8.	Melana	6	6.8%
9.	Diarrhea	6	6.8%
10.	Blood vomiting	5	5.7%

Table 3
Causes of High SAAG and Low SAAG Ascites

Variables	(n)	%
Cause of High SAAG or Transudative of fluid		
Hepatitis C	47	61.0
Hepatitis B	14	18.2
Hepatic encephalopathy	5	6.5
Chronic renal failure	3	3.9
Hepatocellular carcinoma	2	2.6
Hepatitis C and B	2	2.6
Hepatitis B and D	2	2.6
Congestive cardiac failure	1	1.3
Cholestasis	1	1.3
Causes of Low SAAG or Exudative Type of fluid		
Intestinal TB	3	27.3
Cor pulmonale	2	18.2
TB peritonitis	2	18.2
Pancreatitis	1	9.1
Bacterial peritonitis	1	9.1
Chronic renal failure	1	9.1
Pyelonephritis	1	9.1

Results were evaluated by considering each group as 100%

Ascites was one of the major clinical problem of Pakistan, most commonly occurring in the patients with mean age of 50.75 ± 15.845 and it was slightly more common in females as compared to males which was contrary to other studies (Al-Kanwy 1997; Khan 2007 and Shaikh *et al.*, 2010).

Our study shows that the most common type of peritoneal fluid in the peritoneal cavity was of Transudative type, which was mostly due to liver diseases (Hepatitis C, Hepatitis B, hepatic encephalopathy, hepato cellular carcinoma) and congestive cardiac failure, our results were comparable to studies (Al-Kanwy 1997 and Shaikh *et al.*, 2010) and the figures of Hepatitis C, Hepatitis B and Hepatitis B & C were 81.8%, which were nearly the same to a study conducted in Pakistan in 2008 which had the value of 81.3% but the frequency of congestive cardiac failure was higher (Shaikh *et al.*, 2010).

Our study reveals that the exudative type of fluid was most commonly present in the patients of T.B peritonitis, Intestinal T.B, pancreatitis, corpulmonale, bacterial peritonitis and chronic renal failure. The result was in accordance with other studies which also concludes the same that the exudative type of fluid most commonly present in T.B peritonitis and pancreatitis patients but the frequency of T.B peritonitis were much lower in our study as compare to others (Doddamani *et al.*, 2010; Khan 2007 and Shaikh *et al.*, 2010).

An interesting fact was that the most common cause of Ascites was Hepatitis C, Hepatitis B, Hepatitis B and C, Hepatitis B and D which was in accordance with another study (Al-Kanwy 1997 and (Shaikh *et al.*, 2010) but the frequency of causes differ.

In our study, frequency of congestive cardiac failure was 1.1%. This was in contrast to other studies in which there was much high frequency of CCF (Doddamani *et al.*, 2010; Al-Kanwy 1997; Mahmood 2009; Khan 2007 and Shaikh *et al.*, 2010).

According to our study, frequency of hepatocellular carcinoma was 2.3% which was in contrary to other studies (Al-Kanwy 1997 and Mahmood 2009).

Our study shows that the frequency of T.B peritonitis was 2.3% which was in contrast to other studies (Doddamani *et al.*, 2010; Mahmood 2009 and Khan 2007) but it was worth mentioning that no local study mention it. There were no international or local studies that we came across which reports the frequency of Intestinal T.B and this makes our study differ from other studies.

Those causes that were observed in our study but were not mentioned in other studies were hepatic encephalopathy, cholistasis, corpulmonale, intestinal TB and pancreatitis. These findings made our study different from other studies (Doddamani *et al.*, 2010; Al-Kanwy 1997; Mahmood 2009; Khan 2007 and Shaikh *et al.*, 2010).

Most common clinical findings of Ascitic patients were abdominal pain followed by fever, altered level of consciousness, pedal edema, constipation, hematemesis, oliguria, melena, diarrhea, vomiting. This result was in accordance with other studies (Manohar *et al.*, 1990; Vardareli *et al.*, 2004 and Qureshi *et al.*, 2001) which concludes the same that the fever and abdominal pain were one of the most common clinical findings of ascitic patient. Rest of clinical findings were new and were not mentioned or found in other studies of ascites that we came across that is this study had some material of different from other studies.

Although this research was an intensive study on the topic of Ascites but there was still room for improvements, which require further study on this topic. First of all the study was stick only to one hospital. Although this study was conducted in a hospital which provides free of cost service therefore attracts people belonging to under privilege part of our society or lower middle income group and shows a true picture of Ascites in Pakistan as

majority of population in this part of the world comes in this group, it still would have been better if this investigation was conducted in other hospital as well specially if it would have been conducted in private hospitals which would have given us the access to data belonging to a better socioeconomic condition. Lastly, it would have been better if we kept a detail record on day-by-day improvement, the medical and surgical treatment being given, and its effectiveness and any reoccurrence.

CONCLUSION

It can be concluded that hepatitis was a main cause of Ascites. The purpose of this study is to create awareness about the major causes and the trend that is seen in this disease, so that it could be better managed and new advancements can be made.

ACKNOWLEDGEMENTS

We would like to thanks Mr.Masoud Rao, Senior research assistant of Pakistan Research Council, for their sincere help in the completion of this project.

REFERENCES

- Al-Kanwy, B.A. (1997). Etiology of Ascites and the diagnostic value of serum-ascites albumin gradient in non-alcohol liver disease. *Ann. Saudi Med.*, **17**(1): 26-28.
- Ascites-1 [http://www.emedicinehealth.com/ascites/article_em.htm#overview]
- Ascites-2 [<http://www.patient.co.uk/doctor/Ascites.htm>]
- Ayantunde, A.A. and Parsons, S.L. (2007). Pattern and prognostic factors in patients with malignant ascites: A retrospective study. *Ann. Oncol.*, **18**(5): 945-949.
- Cameron, J.L., Kieffer, R.S., Anderson, W.J. and Zuidema, G.D. (1976). Internal pancreatic fistulas: Pancreatic Ascites and pleural effusions. *Ann. Surg.*, **184**(5): 587-593.
- Doddamani, G.B., Pujar, S. and Kora, S.A. (2010). Spontaneous Bacterial Peritonitis in Ascites: A prospective study in a tertiary care hospital. *Journal of Clinical and Diagnostic Research*, **4**: 2737-2741.
- Gines, P., Cardenas, A., Arroyo, V. and Rodes, J. (2004). Management of Cirrhosis and Ascites. *N. Engl. J. Med.*, **350**: 1646-1654.
- Khan, F.Y. (2007). Etiology and diagnostic value of ascitic fluid analysis. *Singapore Med. J.*, **48**(5): 435.
- Mahmood, G., Debnath, C.R. and Mandal, A.K. (2009). Evaluation of 100 cases of Ascites. *Mymensingh Med. J.*, **18**(1): 62-66.
- Manohar, A., Simjee, A.E., Haffejee, A.A. and Pettengell, K.E. (1990). Symptoms and investigative findings in 145 patients with tuberculous peritonitis diagnosed by peritoneoscopy and biopsy over a five year period. *Gut*, **31**: 1130-1132.
- Qureshi, A., Jamshaid, Siddiqui, M. and Zafar, S.A. (2001). Clinical spectrum of Cirrhosis of liver due to HCV in Jinnah Hospital. *Pak Postgrad Med. J.*, **12**(3): 104-107.
- Saif, M.W. (2005). Malignant Ascites Associated with the Carcinoma of the Prostate. *The Journal of Applied Research*, **5**: 2.
- Shaikh, M.A., Khan, J., Almani, S., Dur-e-Yakta and Shaikh, D. (2010). Frequency of causes of ascites in patients admitted at medical unit of a tertiary medical care facility. *J. Ayub Med. Coll. Abbottabad*. **22**(2): 88-92.
- Vardareli, E., Kebapci, M., Saricam, T., Pasaoglu, O. and Açikalin, M. (2004). Tuberculous peritonitis of the wet ascitic type: Clinical features and diagnostic value of image-guided peritoneal biopsy. *Dig. Liver Dis.*, **36**(3): 199-204.