



Neonatal Ascites– Experience from a Tertiary Care Centre

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Abstract

Objective: Neonatal ascites is rare but difficult problem for Neonatologist. To evaluate clinical investigational profile of Neonatal ascites this study was conducted in a city of northern India.

Methods: The Neonates who attended Pediatric Gastroenterology clinic, PGIMER Chandigarh from July 1993 to June 2003 having ascites were enrolled for the study. The history, clinical examination, investigation(USG whole abdomen,ascites fluid examination, LFT, RFT, E CG, Echocardiography, urine examination, MCUG, CT scan, MRCP, Chest Xray etc.) were done depending upon individual cases.

Result: Out of 50 Neonatal ascites, Chylous ascites were seen in 20(40%), biliary ascites in 10(20%), Urinary ascites in 10(20%), Nephrotic syndrome in 2(4%), Cardiac arrhythmia in 4(8%), Toxoplasmosis in 2(4%) CMV in 2 (4%) cases. Chylous ascites were subjected to paracentesis, TPN, MCT, Octreotide, Surgery, Urinary ascites with MCUG, Catheterisation, surgery(for posterior urethral valve),Biliary ascites with CBD drainage and surgery. CMV, Toxoplasmosis, Cardiac arrhythmia, nephrotic syndrome were treated with conservative management.

Conclusion: Neonatal ascites is difficult challenge to Neonatologist. Treatment depends upon varied etiology.

Keywords: Neonatal ascites, Fetal ascites.

Introduction

Neonatal ascites is a rare difficult problem having various etiologies. It is challenging for clinician. Urogenital cause remains most common factor for Neonatal ascites⁽¹⁾. Besides, CMV and Hepatic fibrosis with portal hypertension play a role in producing fetal and neonatal ascites^(2,3). Fetal parvo B19 infection was associated with fetal and neonatal ascites with bilateral corneal opacity.⁽⁴⁾ Twenty percent Neonatal ascites occurs due to GIT disorders⁽⁷⁾. The urogenital anomalies

(urethral rupture, Hydronephrosis, rupture of bladder, Ovarian cyst rupture) are most common cause of neonatal ascites.

Next is GIT causes and intra uterine infection (Toxoplasmosis, CMV) etc. Half of them have malformation requiring surgery.⁽¹⁾

As Neonatal ascites is rare problem there is scarcity of literature in this subject. In our study we have evaluated etiological clinical and investigational profile on this issue.

Materials and Methods

The Neonates who attended Pediatric gastroenterology clinic, PGIMER Chandigarh from July 1993 to June 2003 having ascites were enrolled for the study. The history clinical investigation (USG whole abdomen, ascitic fluid examination, LFT,RFT,ECG, Torch, Parvo B19 Serology, inborn error of metabolism, Echocardiography, MCUG, Urine Examination, CT scan, MRCP, Chest Xray etc.) were done depending on individual case.

Neonatal urinary ascites was diagnosed by paracentesis, ascitic fluid examination, MCUG and detection of leakage of urine in peritoneal cavity and treated by surgery.

Ascitic fluid examination for amylase, Lipase, MRCP to look for pancreatic duct disruption was done to rule out pancreatic ascites. Ascitic fluid examination for triglyceride, lymphocyte, chest CT, Scintigraphy with IV Tech 99 albumin was done to rule out chylous ascites.

TORCH serology, parvoB19 serology was done. ECG, Echocardiography was done for cardiac causes. Screening for Inborn error of metabolism, is done for Lysosomal disorder.

MRCP was done to look for biliary ascites with bile leakage from bile duct and choledochal cyst. Urine albumin, Serum albumin, lipid profile was done for nephrotic syndrome. After proper investigation we manage the cases from conservative treatment to surgery depending upon individual cases

Results

Out of 50 neonatal ascites, chylous ascites was seen in 20 (40%), biliary ascites in 10 (20%), Urinary ascites in 10 (20%), nephrotic syndrome in 2 (4%), cardiac arrhythmia in 4 (8%), toxoplasmosis in 2 (4%), CMV in 2 (4%) cases. Chylous ascites was treated with paracentesis, TPN, MCT, Octreotide, Surgery, Urine examination, MCUG, Catheterisation. Surgery (posterior Urethral Valve) was done for urinary ascites. Biliary ascites was treated with CBD drainage, Surgery. CMV, Toxoplasmosis, Cardiac

arrhythmia, Nephrotic syndrome was treated with conservative management.

Hemoglobin in all 50 babies were 13-18 gram percent (mean 14.5)

Bilirubin was raised in all ten cases of biliary ascites where there was raise of conjugated bilirubin due to rupture of choledochal cyst.

There was no case of NEC.

There were 3 cases of late preterm baby (34-37 weeks). Rest were term babies

There was no Rh incompatibility.

Isolated ascites was seen in urinary ascites, chylous ascites, biliary ascites, intrauterine infection (CMV/ toxoplasmosis)

Nonimmune hydrops with generalised swelling and ascites was seen in nephrotic syndrome and PSVT.

CMV and Toxoplasmosis caused hepatitis, portal hypertension and isolated ascites .

The causes of neonatal ascites are given below in tabular form-

Chylous ascites	20(40%)
Biliary ascites	10(20%)
Urinary ascites	10(20%)
Nephrotic syndrome	2(4%)
Cardiac arrhythmia	4(8%)
Toxoplasmosis	2(4%)
CMV	2(4%)

Discussion

Review of 27 cases of neonatal ascites in first month of life, usually immediately after delivery revealed a broad spectrum of causes. Seven neonates had urinary ascites, five had bowel disease, three had catheterization, two had liver diseases, one each had toxoplasmosis, ovarian cyst, chylous ascites. In seven cases no cause was found.⁽¹⁾

Chou et al reported two cases of neonatal ascites , one was caused by CMV and no obvious cause as found in second case⁽²⁾.

Sou cc et al reported an infant with congenital cytomegalo virus infection who presented with fetal ascites and pulmonary hypoplasia. Severe hepatic fibrosis with portal hypertension played

role in fetal ascites⁽³⁾ Plachouras N et al reported a case of fetal hydrops, ascites and pleural effusion seen in fetal ultrasound examination. Fetal blood was tested for parvo B 19 antibodies. Intrauterine fetal blood transfusion was given. Bilateral corneal opacities was seen⁽⁴⁾.

Favre R et al observed nonimmune fetal ascites in a series of seventy nine cases where urinary ascites was most frequent⁽⁵⁾

Isolated fetal ascites is commonly caused by intra abdominal disorder due to urinary tract obstruction⁽⁶⁾. 40% cases occurred as result of GIT disorder⁽⁷⁾

Schmider A et al noticed wide range of etiology associated with fetal ascites. Those who had malformation had worst prognosis⁽⁸⁾

Most common cause of neonatal ascites are urogenital anomalies (urethral valve, hydronephrosis, rupture of bladder, rupture of ovarian cyst. Next is GIT anomalies and of liver and congenital infections (toxoplasmosis, CMV). Half of causes have definite radiologic diagnosis, mainly malformation requiring surgery⁽⁹⁾

The antenatal diagnosis include search for fetal hydrops, congenital anomaly of heart, urinary tract, intra abdominal calcification. Syphilis, toxoplasmosis, CMV, hepatitis must be excluded. Neonatal ascites investigation include search for calcification, bowel distention, pneuoperitonum, IVP, cystography⁽¹⁰⁾

Yanashito Y et al showed neonatal ascites diagnosed by antenatal USG having congenital CMV infection having intrahepatic calcification⁽¹¹⁾

Sun CC et al observed an infant with congenital CMV infection having fetal ascites and pulmonary hypoplasia, severe hepatic fibrosis, portal hypertension⁽¹²⁾

J. G Feeney et al observed fetal ascites in an isolated congenital heart malformation⁽¹³⁾

Colodny et al observed 25% of neonatal ascites to be urogenital origin. Opacification of ascitic fluid by leakage of contrast material during cystoscopy or IVU may lead to less relative radio lucency of liver⁽¹⁴⁾

Vasdeb N et al observed clinical presentation, radiology of four neonates with spontaneous urinary bladder rupture and ascites. Management includes surgery⁽¹⁵⁾

Santosh B Kurbet et al noticed that isolated fetal ascites is associated with high mortality when congenital anomaly is present.⁽¹⁶⁾

Meconium peritonitis can be diagnosed by prenatal ultrasound and neonatal outcome is favourable.⁽¹⁷⁾

Wax JR et al noted isolated cases of nonimmune fetal ascites caused by intestinal lymphangiectasia in Turner syndrome⁽¹⁸⁾.

Okawa T et al observed a case of massive fetal ascites with meconium peritonitis causing hydrops⁽¹⁹⁾

Keiichi Uchida et al observed that prenatal diagnosis is essential for first step of perinatal therapy for meconium peritonitis. Surgical therapy is selected according to information of prenatal diagnosis.⁽²⁰⁾

I.I Jeican et al reported a case of fetal meconium peritonitis with ileal atresia and perforation.⁽²¹⁾

Chiba T et al described two cases of ileal atresia with ileal perforation and fetal ascites due to meconium peritonitis. It was detected by antenatal ultrasound examination⁽²²⁾

Geetika Agrawal observed that isolated fetal ascites is a rare ultrasonic findings. It is commonly associated with Genito urinary, gastrointestinal condition, mainly bowel obstruction. Colonic atresia followed by perforation may be included in differential diagnosis of isolated fetal ascites.⁽²³⁾

El Bishry G et al observed that isolated fetal ascites have good prognosis with spontaneous resolution if there is normal karyotype and no congenital infection⁽²⁴⁾

Ito H et al observed fetal and neonatal ascites in lysosomal storage disorders⁽²⁵⁾

Riley K Kitamura et al observed that delivery of fetuses known to have meconium peritonitis depends on clinical stability of fetus.⁽²⁶⁾

Basu S et al reported case of fetal ascites due to CMV infection. The infant was successfully

treated with ganciclovir. But global developmental delay and sensoryneural deafness was seen on long run⁽²⁷⁾

V Mouravas et al described diagnosis and management of congenital chylous ascites where paracentesis was done and neonates were treated with TPN, MCT oil, Octreotide, chest CT, scintigraphy with IV TECH 99 albumin showing intra abdominal leakage of lymph and its penetration in thoracic cavity⁽²⁸⁾

Zeidan S et al described fibrin glue application in management of refractory chylous ascites in children.⁽²⁹⁾

Said A et al described peritoneo venous shunt for refractory chylous ascites.⁽³⁰⁾

Mustafa O Oztan et al described extra vasation of fluid due to displacement of umbilical catheter resulting in neonatal ascites.⁽³¹⁾

Conclusion

Neonatal ascites is difficult challenge to neonatologist. Treatment depends upon varied etiology from conservative management to surgery. Early diagnosis is of immense value for better outcome.

Conflict of interest- Nil

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