

Ascites in the Pediatric Age Group

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- Professor of Pediatric Hepatology, Ain Shams University, Cairo, Egypt
- Graduated from Ain Shams Faculty of Medicine in 1979
- Msc in pediatrics in 1983 (Msc thesis titled Non A Non B hepatitis in multitransfused children)
- MD in pediatrics in 1989 (MD thesis titled Somatostatin in chronic liver disease done in Glasgow, UK under joint supervision of both Ain shams University & Glasgow University). Shared in establishing the liver transplantation program in both Ain Shams University and Wady el Neel Hospital. Supervised over 100 MD & Msc thesis (mostly in the field of pediatric liver disease)
- Member of both AASLD and EASL
- Executive editor of the Afro-arab liver Journal
- Vice president of the Society of Friends of the Liver Patients in the Arab World



Objective: to define ascites in children as regards

- Prevalence
- Clinical picture
- complications
- DD
- Management
- Post-transplantation ascites

- In liver disease ascites represents a state of excess total body sodium & H₂O
- Prevalence: 44% of children with cirrhosis
- Factors that favor formation



pressure in sinusoids

pressure in portal venous system

albumin

Clinical Picture

- Onset: rapid ----- acute events eg hge, shock, occlusion of PV or HV, surgery, anaesthesia, hepatoma
 insidious ----- slowly progressive liver failure

In children

- Less frequent peripheral oedema
- More frequent periorbital oedema (infants)
- Weight gain may be the first indication of ascites

Complications

- mechanical complications
 - respiratory impairment
 - compression of great vessels
 - hernias
 - gastroesophageal reflux
 - impaired gastric motility
 - obstructive sleep apnoea syndrome

SBP

	Infected ascites	Non infected	P value
fever	6/12 (50%)	13/29 (44.8%)	0.95
Worsening of asc	5/12 (41.7%)	13/29 (44.8%)	0.95
Encephalopathy	1/12 (8.3%)	3/29 (10.3%)	0.95
jaundice	5/9 (55%)	5/13 (38%)	0.75
WBC	11.800	7.470	0.22
Albumin	2.1	2.9	0.01
ALT	67	45	0.33
AST	117	104	0.89
Bil	10.2	5.4	0.76
INR	1.3	1.5	0.83
creatinine	0.5	0.5	0.34

Vieira et al, J Pediatr Gastroenterol Nutr, 2005 (40)

- It was not possible to differentiate ascitic children with SBP from those without SBP neither clinically nor biochemically
- The biochemical features of the ascitic fluid in children with SBP (pH, glucose ,LDH, protein) were not different from those in ones without SBP
- Gram stain was not useful in identifying SBP

Vieira et al, J Pediatr Gastroenterol Nutr, 2005 (40)

- All children with SBP were cirrhotic and had a low serum albumin
- All cirrhotic patients with ascites should be tapped and treated according to PMN cell count or positive culture results

Hepatorenal Syndrome

- Incidence in children is not known
- Mortality & morbidity in children is not reported
- Few reports on treatment using
 - terlipressin (30microg/kg/d)
 - octereotide
 - albumin

Management

- Salt restriction
- Diuretics
- LVP
- TIPS
- Shunts
- Liver transplantation

- Should every child with ascites be treated?
- What is the initial treatment?

- Diuretics : aim

- * Decrease wt at a rate of $<1\%$ /day

- * produce a negative fluid balance of 10ml/kg/day

If 24 hr urinary Na excretion is >78 mEq/day wt loss is certain to occur

- Salt & H₂O restriction
 - * Na is restricted to 1-2 mEq/Kg/day
 - * H₂O is restricted only if s.Na is <120mEq/L
 - * H₂O is restricted to 70-80% of daily intake

LVP

	Mean +_ SD
Volume removed (ml)	3.129
MI/kg removed	118
Duration (h) of drainage	2.9
% infused with IV albumin	95%
mean doso of albumin (gm/Kg)	0.6
Complications	
Hypotension	None
decreased urine output	1
hemorrhage	None
Ascitic leakage	None

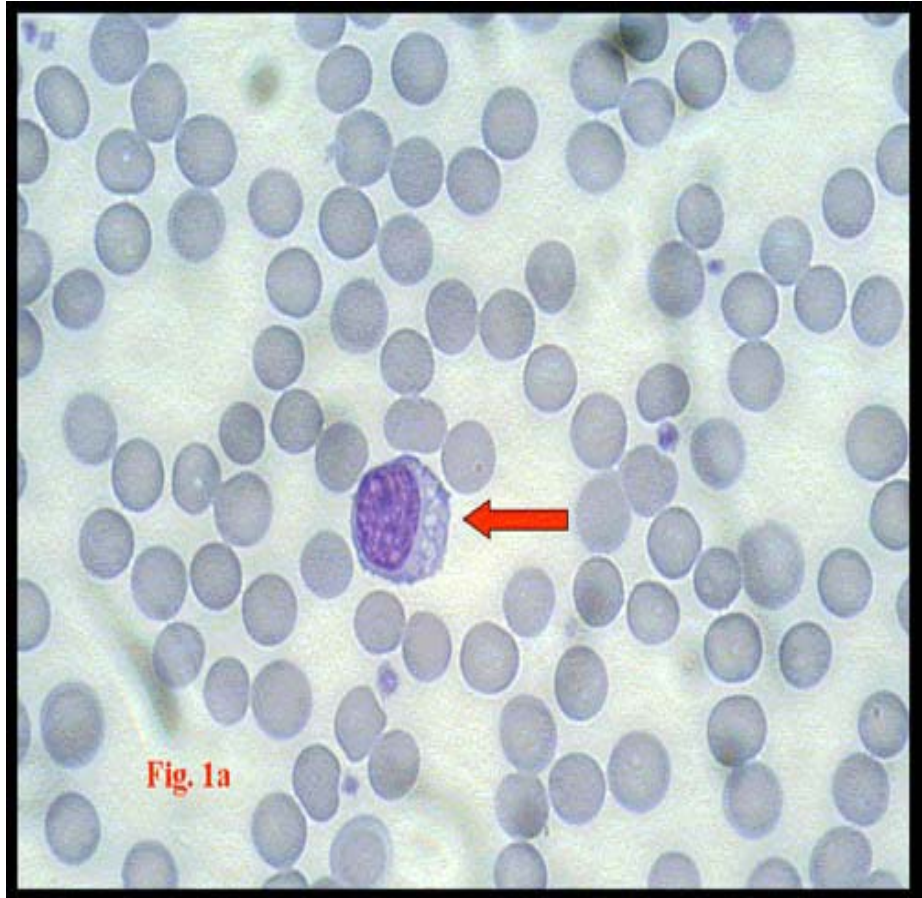
Kramer et al, J Pediatr Gastroenterol Nutr, 2001 (33)

DD

- Chylous ascites
- Bilious ascites
- Urinary
- Tuberculous
- Ventriculoperitoneal shunts
- Eosinophilic
- FMF
- SLE
- Hypothyroidism
- Gynecologic: ovarian tumors, rupture, torsion
- GIT: pancreatitis, infected bowel, perforation

Neonatal Ascites

- Metabolic disorders: lysosomal storage disease (GM1, MPS VII, NPC, Sialidosis etc)
- Haematologic disease
- Cardiac disease
- Genitourinary malformations
- Gastrointestinal malformations
- Feto-maternal or twin-twin transfusions (anasarca)



Post Transplantation ascites

- Incidence in children is 25-31%
- In children without PO complications it is 7.9%
- Children with preop portal hypertension, postop pleural effusion & complicated PV anastomosis sig more often developed ascites

- In children with no postop complications ascites more commonly developed in older ones who had preop ascites, lower plt count, had undergone endoscopic or surgical management for varices
- SAAG was high in this ascites

Herzog et al, Pediatr Transplan, 2005 (9)

Thank You