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CASE REPORT: DEAD FETUS WITH BILATERAL HYDRONEPHROSIS

Dr. M.A. TAHER[1]

ABSTRACT

A lady of 30 years, para.I, gravida 2nd came for obstetric ultrasound with a history of 19 wks.and of amenorrhea and vaginal bleeding for 3 days. Abdominal ultrasound reveals a dead fetus of 13 wks.and 6 days of gestation(biparietal diameter, BPD = 26.4 mm, crown-rump length, CRL = 58.2 mm) and bilateral fetal hydronephrosis (Fig.1)

INTRODUCTION

The definitive urinary tract, the metanephros, begins to develop during the 6th week of gestation.[1] Absence of ureteral bud formation occurs in approximately one in 4000 (four thousand) birth and causes bilateral renal agenesis and death from pulmonary hypoplasia.[2] Bilateral renal agenesis is seen in the obstetrical period and is incompatible with life. Sonographically, the diagnosis may be difficult and may be made by exclusion. Absence of identifiable renal tissue after ten weeks of gestational age and absence of bladder filling after 12 to 14 weeks gestational age is strong evidence for bilateral renal agenesis. After about 14 weeks the presence of oligohydramnios is also strongly suggestive.[3] When one does not visualize the fetal urinary bladder over a period of about 2 hours, 30 to 60 mg of furosemide may be given intravenously to the mother. This may induce fetal diuresis and the subsequent appearance of urine in the bladder about 15 to 45 minutes after administration; if this occurs, the fetus can produce urine and bilateral renal agenesis is excluded. Conversely, absence of urine in the fetal bladder following furosemide challenge is not a reliable indicator of bilateral renal agenesis e.g. severe intrauterine growth retardation with normal postnatal renal function may produce identical sonographic findings. As a result, this test has recently fallen out of favour.[2] Postnatal sonography and DTPA renograms are being done in neonatal hydronephrosis.

CASE REPORT

A lady of 30 years, para 1, gravida 2nd came for obstetric ultrasound with a history of 19 wks. of amenorrhea and vaginal bleeding for 3 days. Abdominal ultrasound reveals a dead fetus of 13 wks. and 6 days of gestation (biparietal diameter BPD = 26.4 mm, crown-rump length CRL = 58.2 mm) and bilateral fetal hydronephrosis (Fig.1). The patient had no history of blood dyscrasia, and did not give any history of trauma.

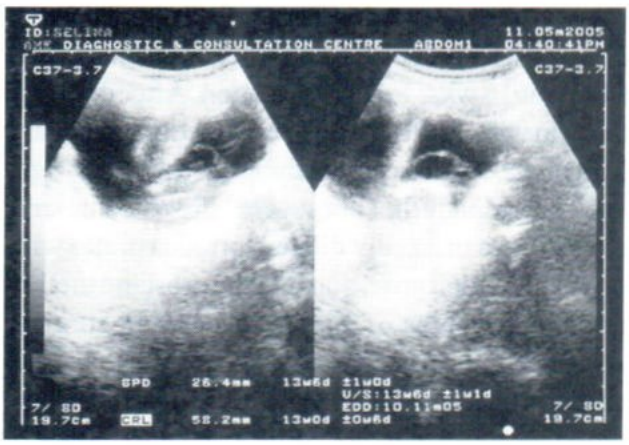

Fig.1 Fetal bilateral hydronephrosis.

DISCUSSION

Fetal hydronephrosis is one of the urinary tract anomalies which frequently requires postnatal surgical

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management.[4] In Khulna, Bangladesh, Paul et.al. reported a case of unilateral fetal hydronephrosis diagnosed by sonography, managed by surgical intervention in postnatal period and monitored by DTPA renogram.[5] Fetal kidneys can be seen with high resolution ultrasound by 12 to 14th week in a paraspinal location just below the liver and are imaged routinely after 26th weeks.[6] We found five cases of age range 30 weeks' gestation to 6 years suffering from fetal and neonatal hydronephrosis as confirmed by sonography (3.5 to 8 MHz) and monitored by DTPA renograms.[7] Posterior urethral valves (PUVs) may lead to complete urinary tract obstruction and profound oligohydramnios. This typically results in lethal pulmonary hypoplasia. Holden[8] and colleagues reported 3 cases of diamniotic twins discordant for complete bladder outlet obstruction and found that all 3 cases of twins who had bladder outlet obstruction died of lethal lung hypoplasia. However, all the twins with normal amniotic fluid volume survived. They concluded that the presence of a normal amniotic fluid volume in one sac does not protect the anhydramniotic twin from pulmonary hypoplasia.[8] Kontopoulos et al presented a case of monoamniotic male twins discordant for urinary tract obstruction resulting from a PUV at 16 wks. 1 day of gestation. After delivery, the twin with the PUV had no evidence of pulmonary hypoplasia, voiding cystourethrogram showed no right vesicoureteral reflux but severe left vesicoureteral reflux into a markedly dilated tortuous ureter with probable ectopic insertion into the prostatic urethra and at 15 months of age, he underwent surgical correction; specifically, cystoscopy confirmed the presence of an ectopic insertion of the left ureter; thus, the repair consisted of a left-to-right transureteroureterostomy (to avoid reimplantation of the left ureter into the abnormal bladder), right reduction ureteroplasty. Monfort abdominoplasty and bilateral orchidopexies. Postoperatively he did well.[9]

CONCLUSION

We hope to make fetal therapy more widely available than at present.

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FATAL KIDNEY TRANSPLANT

Dr. M.A. TAHER[1]

A young man of 19 years came with fever and dysuria. Nuclear medicine renal scan (Tc DTPA) showed normal study, but hippuran renogram depicted bilateral renal parenchymal insuffciency. Renal biopsy showed end-stage renal disease. Maintenance hemodialysis was started in 1995 in Dhaka and Rangpur. He had a live unrelated donor kidney transplant in 1997 in Bangalore, India. He used immunosuppressant drugs regularly e.g. steroid, cyclosporine etc. and started rapamycin in 2003 in England. He died on 25 Feb. 2005 at the Royal London Hospital due to (a) viral myocarditis, (b) severe chickenpox and (c) immunosuppression from renal transplantation.

Radiodinated hippuran. Tc-99m labelled dimercaptosuccinic acid (DMSA). Diethylene triamine pentaacetic acid (DTPA) and mercaptoacetyltriglycine (MAG3) are frequently used radiopharmaceuticals for the evaluation of individual renal function. Sherman and Blaufox (Nephron 1980; 25: 82-86) described reversal of absent renal uptake of ^{131}I orthoiodohippuran in obstructive uropathy when opstruction was relieved. Of interest, Taylor et al. have described absence of ^{99m} Tc DMSA (dimereaptosuccinic acid) uptake in a patient with acute tubular necrosis from ischemia, but normal renal function returned after hemodialysis.[1] We reported earlier a case of reversal of DTPA uptake in a multicystic kidney after partial nephrectomy.[2] Quinn and Elder (JNM 1991; 32: 2273-2274) presented a patient with very poor uptake of 99m Tc DTPA scan demonstrating only mild renal impairment. A three year old boy of Turkey suffering from growth retardation had Tc-99m DMSA and MAG3 scintingraphy to evaluate the renal function. The scintigraphy of Tc-99m MAG3 was totally normal but there were poor renal cortical uptake of Tc-99m DMSA. Interestingly there were also significant amount of activity in the urinary bladder in DMSA scintigraphy. The boy was having proteinuria.[3]

DMSA and glucoheptonate (glucose monocarboxylic acid or GHA) have significant binding in the renal cortex. About one half of the dose appears in the urine 2 hours after injection which is especially useful for delineating the collecting system. DTPA has its maximum concentration over the kidneys at 4 to 5 minutes. Body retention of DMSA is considerably longer than that of DTPA or GHA because of its strong binding to plasma proteins. Hippuran is extremely useful for functional and combined functional/imaging studies, however, short half-life of 1-123 (only 13 hours), lengthy labeling time and the free iodide content (upto 5%) may be too high to estimate effective renal plasma flow (ERPF) accurately.

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OVARIAN PREGNANCY

Dr. M.A. TAHER[1]

ABSTRACTS

During the 1970s, the number of hospitalizations for ectopic pregnancy is more than double, by the mid1980s, it had easily increased to triple.[1] The mortality from ectopic pregnancies has decreased 90% since 1979.[2] Most of the ectopic pregnancies are tubal (95-97%)--, rare sites are ovary (0.5-1%), cervix (0.1%) and interstitial/ cornual (2 - 5%). Sohaey and Woodward published a case of cervical ectopic pregnancy in 1966.[3] Doppler examination demonstrated a living embryo. The patient was treated with local methotrexate and did well. Cervical pregnancy is very rare (0.1%) and may mimic a complex nabothian cyst or cystic malignancy. The best results in ectopic gestations are obtained with transvaginal ultrasound (TVUS) and color flow imaging (CFI).[4] Without the use of color Doppler, 2% to 16% of ectopic gestations may be overlooked.[5-6] In some ectopic pregnancies, the echogenic ring may look like the ovarian corpus luteum cyst.[7] A hemorrhagic ovarian cyst may simulate ruptured ectopic pregnancy.[8] The broad prevalence of pelvic inflammatory disease (PID) and its successful treatment with antibiotics have created a patient population with patent but dysfunctional fallopian tubes; similarly, reanastomosis of ligated tubes, the use of intrauterine contraceptive devices (IUCD), and endometriosis are contributing risk factors for ectopic gestation. It is possible to identify an intrauterine gestational sac by the transabdominal route when the serum beta HCG (human chorionic gonadotropin) level is 1800 mIU (or about 35 days menstrual age) and by transvaginal scanning at a level of 1000 mIU (about 32 days menstrual age). The higher incidence of an ectopic twin in stimulated ovulation should be borne in mind.[9] Transvaginal color duplex sonography (TV.CDS) may enhance detection of some ectopic pregnancies that are not apparent of conventional transvaginal sonography.[10] Ali and Ferdous reported a case of ovarian pregnancy of about 18 wks. gestation.[11] Ovarian pregnancy may be (a) primary. (ovum fertilization within the ovary) or (b) secondary (the implantation of a tubal abortion on an ovary). Nisenblat et al reported a case of primary ovarian ectopic pregnancy misdiagnosed as an asymptomatic eight-weeks missed abortion.[12] and showed the importance of power Doppler study and histologic section.

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BILIARY ASCARIASIS: CAUSING RIGHT UPPER QUADRANT PAIN SONOGRAPHIC EVALUATION OF 60 PATIENS IN CENTER FOR NUCLEAR MEDICINE AND ULTRASOUND, RANGPUR: NORTHERN PART OF BANGLADESH.

Dr. Md. Murshed Ali,[1] Dr. Md. Jabed Akhter,[2]
Dr. Jaharatul Ferdous[3]

INTRODUCTION

Ascaris lumbricoides is the most frequent human helminthes parasite. Human ascariasis is rarely symptomatic but complications can arise due to worm migration. Erratic worm migration into the biliary tree is a rare but threatening condition with its potential to develop complications such as cholecystitis, Pancreatitis, obstruction of the bile ducts, liver abscesses and recurrent pyogenic Cholangitis.[1]

The clinical features associated with biliary ascariasis including recurrent biliary colic, obstructive jaundice, pyogenic Cholangitis, vomiting of the roundworms, hepatomegaly, acalculous cholecystitis, and acute cholecystitis. Fragments of the adult worms or their ova may form a nidus for the development of biliary calculi.[1]

Although plain radiograph, oral cholecystograms, intravenous cholecystograms, and ERCP have been advocated in the diagnosis, ultrasound has been shown to have high diagnostic accuracy in the diagnostic work-up of biliary ascariasis. Ultrasound is safe, non-invasive, accurate, rapid and cheap and in most instances, it is the only diagnostic modality required. Ascariasis may appear as thick, echoic strip containing a central, longitudinal, anechoic tube, probably representing the worm's digestive tract (inner tube sign). Often the worms are seen as one or more non-shadowing tube like structures that may be straight or coiled (strip sign), as seen in the present case. Aggregates of worms may have appearance like spaghetti (spaghetti sign).[2] The impacted worm sign is characteristic of biliary ascariasis and presents ultrasonically as long curvilinear, tubular non-shadowing structures with echolucent cores, in the distribution of intrahepatic biliary ducts.[3] Sonography is valuable not only in the diagnosis of biliary ascariasis but in the follow-up of efficacy of its treatment.

CT and MRI appearances of biliary ascariasis has been described. Bull's eye and Eye-glass appearance are seen in transverse sections. On reformation of the transverse CT and Coronal MR images, the tubular ascaris is better depicted.[4]

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MATERIALS AND METHODS

Infestation with Ascaris lumbricoides is seen worldwide. Recently, there has been much interest in the pancreatic-biliary complications of Ascaris infection. In this study, we present our experience of 60 patients seen in Center for Nuclear Medicine and Ultrasound, Rangpur, a referral center. Among them 34 were male. Age ranging from 10 to 55 years. All the patients were referred from the Department of Surgery, Rangpur Medical College and Hospital, Rangpur and LAMB hospital Dinajpur, over a 1-vr period (September of 2001 to August of 2002). All of the patients came with a history of severe pain in the right upper abdomen, some of them had history of vomiting and rise of temperature.

IMAGING FINDINGS

A sagittal ultrasonographic (US) image of the porta hepatis showed a tubular, nonshadowing structure with a highly echogenic wall and a less echogenic center, within the slightly dilated common bile duct Additional images better illustrated both the extent of the echogenic area, as it lay insinuated from the common hepatic bile duct to the head of the pancreas, and the tubular shape of the abnormality. The tubular structure is approximately 5 mm in diameter.

US readily depicts the worm in the bile ducts or gall bladder[5,6] The diagnosis is established by means of microscopic identification of Ascaris lumbricoides eggs in fecal samples. An Ascasis lumbricoides worm occasionally is identified in stool or vomitus after antihelminthic therapy with albendazole.[7]

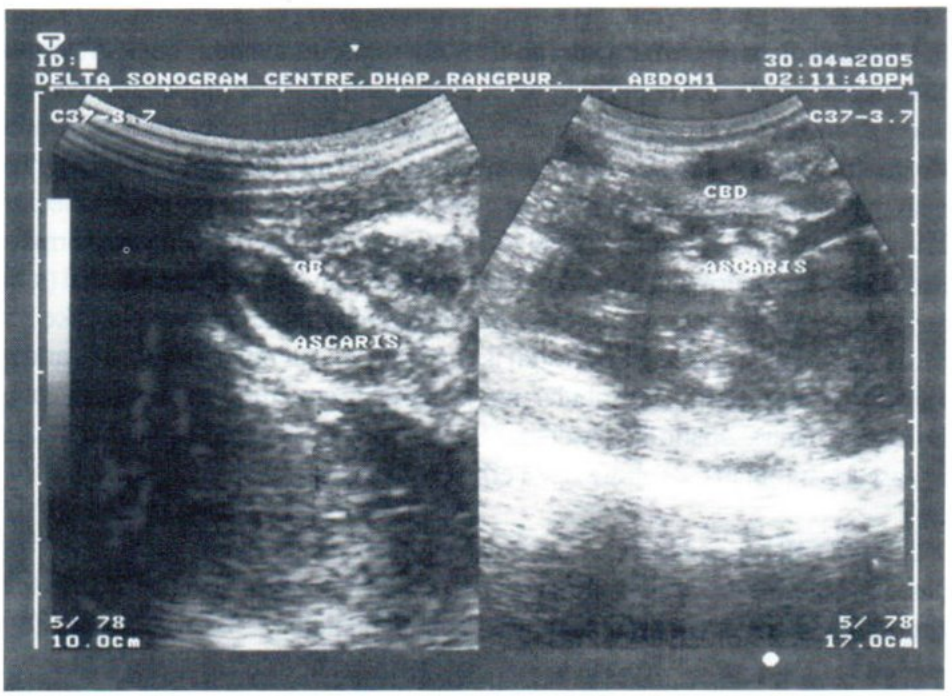

Fig. 1 Dead Ascaris in Gall bladder & CBD.

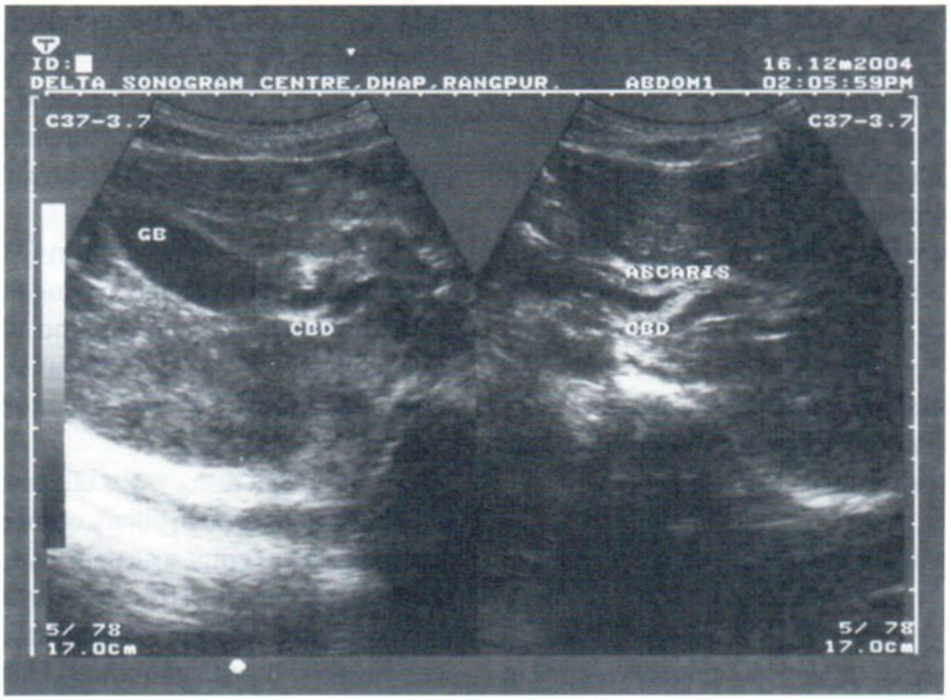

Fig. 2 Ascaris in CBD.

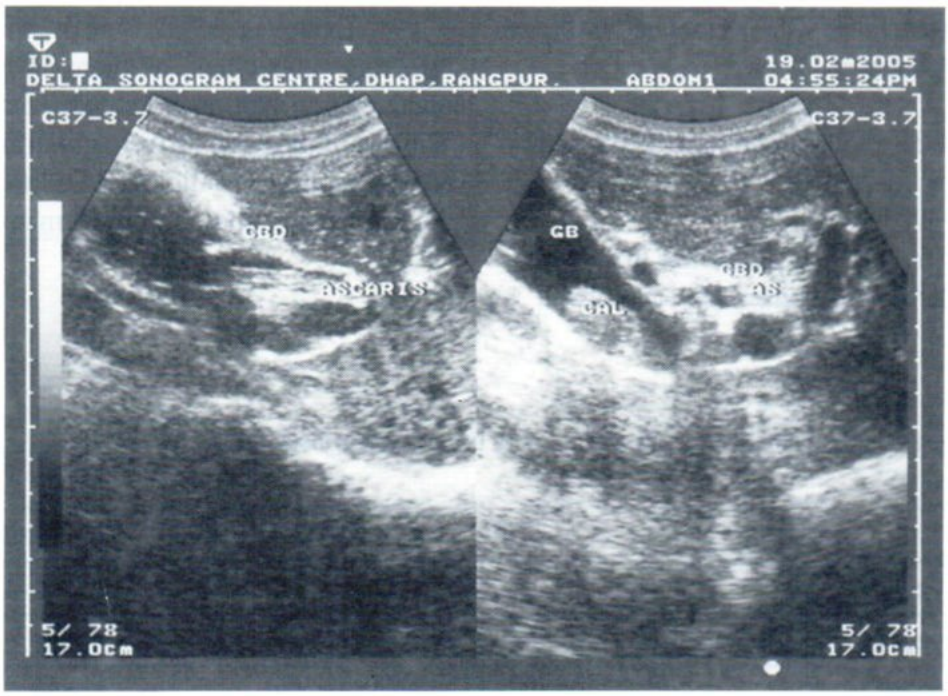

Fig. 3 Ascaris in CBD & Stone in GB.

RESULT

Among the sixty cases round worms were seen in the CBD in 47 mm. In ten cases worm was seen in the gall bladder and three cases in the dilated intra hepatic duct mainly the left. Worms found the gall bladder, four were alive and six were dead. In those in CBD only two 40 were alive and rest 07 were dead.

The distended gall bladder was found in 22 cases 6 of those showed features of cholecystitis. This six showed worm in gall bladder.

The rest of the patient had normal size, shape of gall bladder.

In 42 cases, common bile duct was normal in caliber. 12 had both intra and extra hepatic biliary dilatation.

In 8 cases, there were associated multiple stones in gall bladder.

These 8 cases diagnosed were confirmed by cholecystectomy.

Follow up scan was performed in the rest of the 52 cases after having conservative treatment.

Cholangitis were reported in 8 cases as described by thickening and increased echogenicity of the wall of biliary channels in irregular fashion.

Along with round worm in CBD, Pancreatitis was reported in two patients having scan evidence of broad hypoechoic pancreas and was confirmed biochemically. Round worm was reported in two female patients who were pregnant about 18 weeks.

Relevant history was taken in every patient showing round worm in biliary channels, There were acute episode of epigastric pain, dyspepsia, nausia, anorexia, pyrexia etc. History of passage of worm in the vomitus was present in 19 patients and 7 patients was presented with jaundice. History of taken antihelminthic drugs before the episode of pain were found in 6 patients.

Treatment records were documented from the referring physicians, of them 10 patients were operated and worms were taken out of the CBD. The rest of the patients were given antihelminthic, antispasmodic and antibiotics. Follow-up USG were done in 40 cases showing no worm in CBD by USG.

TABLE 1 Age and Sex Distribution of patients with biliary Ascariasis.

Age	Male	Female
10-20 years	08	12
21-30 years	06	09
31-40 years	05	05
41-55 years	07	08

TABLE 2 Biliary ascariasis and educational and socio-economic status of the patients;

Educational and socioeconomic Class	Male	Female
Illiterate and low socioeconomic Class	22	31
S.E.C. above/high socio-economic Class	02	05

S.E.C. = Socio-economic Class

TABLE 3 Result of treatment of patients and follow-up.

Mode of Treatment	Male	Female	Follow-up	
Medical Treatment	**16**	**34**	**Male**	**Female**
Surgery	**03**	**07**	**21**	**34**

DISCUSSION

Ascaris lumbricoides infects approximately 1 billion people worldwide.[8] It is distributed throughout the tropics and subtropics and is also present in other humid regions such as the rural southeastern United States.[9] Approximately 4 millions people in the United States are infected, many of whom are immigrants.[10] Most cases occur where there is poor fecal sanitation.[11]

The human infection life cycle begins by ingestion of an egg, with the larvae hatching in the small intestine. The larvae invade the small-bowel mucosa, migrate through the circulatory system to the lungs, invade the alveoli, ascend the tracheobronchial tree, and then are swallowed into the small intestine where they mature into adult worms.[12] Ascarids may reach 40 cm in length with a width of 3-6 mm.[13] Intestinal infestation is often asymptomatic. Migration of worms into the biliary tree is a well-known complication, which may result in biliary colic, cholecystitis, Cholangitis, intrahepatic abscesses, or Pancreatitis. Followed, Cholelithiasis is the second most common cause of acute biliary symptoms, worldwide.[14]

The differential diagnosis for increased echogenicity within the common bile duct, either diffuse or focal, includes calculus, sludge, pus, thrombus, tumor, gas, foreign body, and parasites. Calculus or calculi are excluded in this case because the intraluminal echogenic region did not shadow and did not consist of one or multiple round or oval echogenic regions. Sludge, pus, and thrombus would not be expected to be so discretely tubular yet much smaller in cross-sectional area than the common duct and should also appear more amorphous, lacking the prominently echogenic wall demonstrated in this case. Bacterial infection is unlikely because the patient was afebrile and without leukocytosis.[15]

In US, Ascaris lumbricoides in the biliary ducts usually manifests as an echogenic tubular structure, compared with bile, and has a diameter of approximately 3-6 mm, a relatively hypoechoic center, and a more echogenic wall. It may exhibit slow movement. Ascarids typically lie parallel with the long axis of the bile duct.[13,15] They may be coiled. If multiple, they may completely fill the bile duct,

producing either the "spaghetti sign",[14] or if they are very densely packed in the bile ducts, they may appear amorphous and manifest as hyperechoic pseudotumors.[16]

This study reflects that, biliary ascariasis appears more common than it is anticipated. This study also depicts importance of exclusion of biliary ascariasis in patients with upper abdominal pain.

This study also support that biliary ascariasis is more common in illiterated and low socioeconomic group of population, may be due to ignorance and poor hygienic condition.

CONCLUSION

In contrast to our socioeconomic condition it is necessary to deworming routinely for prevention of biliary ascariasis and its complication, particularly in the low socioeconomic and illiterated population groups.

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RENAL CORTICAL SCINTIGRAPHY IN THE ASSESSMENT OF ACUTE PYELONEPHRITIS IN CHILDREN

Ashoke Kumar Paul,[1] Choudhury Habibur Rasul[2]

ABSTRACT

Acute pyelonephritis is a major cause of morbidity in children with urinary tract infection and can result in irreversible renal scarring leading to hypertension and end-staged renal disease. Tc-99m-dimercaptosuccinic acid (DMSA) scintigraphy is the imaging modality of choice for the detection of acute pyelonephritis and renal scarring. Forty-nine children (ages ranging from 9 months to 11 years) with urinary tract infection, having positive urine culture, were studied. A DMSA scan was performed within 72 hours of receiving antibiotic during acute infection. Follow-up scintigraphy was done at 6 months of initial scan in children with acute pyelonephritis documented by DMSA scan. Scintigraphy showed changes consistent with acute pyelonephritis in 27 (55.10%) children and the abnormalities were bilateral in 17 (63%) cases and unilateral in 10(37%) cases. Among these 44 abnormal kidneys, scintigraphy demonstrated solitary defect in 29 kidneys, multiple defects in 6 kidneys and diffused decreased uptake in 9 kidneys. Twenty children (34 kidneys) were available for follow-up evaluation and scintigraphy showed complete recovery in 21 of 34 (62%) kidneys and renal scarring in 13 of 34 (38%) kidneys. Renal scarring was found in 5 of 7 kidneys (71%) with diffuse decreased uptake, 2 of 5 kidneys (40%) with multiple cortical defect and 6 of 22 (27%) with single focal defect. From the study, it is observed that the scintigraphic pattern of acute pyelonephritis might be helpful to assess the risk of renal damage due to scarring following acute pyelonephritis.

Key words: Tc-99m-DMSA scintigraphy; children; acute pyelonephritis, renal scar

INTRODUCTION

Renal cortical scintigraphy is used for the detection of acute pyelonephritis and renal scarring in children with urinary tract infection. The commonly used clinical and laboratory parameters are not reliable for the diagnosis of acute pyelonephritis. Several imaging techniques have been evaluated for the detection of renal parenchymal infection. Studies have shown that cortical scintigraphy is able to detect twice as many defects as ultrasonography and four times as many defects as intravenous urography.[1,2] Computed tomography has a similar sensitivity and specificity for the detection of acute pyelonephritis to cortical scintigraphy, but is more expensive and has a higher radiation exposure.[3,4] Acute pyelonephritis in childhood can result in renal scarring leading to hypertension and chronic renal failure. We have carried out this prospective study to evaluate the importance of renal cortical scintigraphy to identify children at risk from renal damage due to acute pyelonephritis.

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MATERIALS AND METHODS

Children with clinical symptoms of urinary tract infection and positive urine culture who were referred to us from paediatric unit, Khulna Medical College Hospital for imaging studies were evaluated. Urine culture was regarded as positive when there is a growth of single organism with a colony count of more than 105/ml on a clean catch specimen. All children had sonography to rule out abscess and obstruction. Children with known renal tract abnormalities were excluded from the study.

Renal cortical scintigraphy was performed within 72 hours of receiving antibiotic during acute infection. At our centre, we routinely image the kidneys 2 to 3 hours after intravenous injection of Tc-99m-DMSA in a dose of 50 μCi/kg body weight. Planar images of posterior and posterior-oblique views were obtained in a Siemens 37 Digitrac Basicam Gamma Camera with a high-resolution parallel-hole collimator for 500 Kcounts using a 256x256 matrix. Single or multiple areas of diminished cortical uptake with preservation of renal outline or diffuse decreased uptake in an enlarged kidney was considered for the diagnosis of acute pyelonephritis.

Follow-up scintigraphy was done at 6 months of initial scan in children with acute pyelonephritis documented by DMSA scan. Renal scarring was considered if the affected kidney shows cortical thinning or focal cortical defect with loss of volume or become small kidney.

RESULTS

A total of 49 children were evaluated of whom 34 were girls and 15 were boys and age ranged from 9 months to 11 years. The organism isolated from the urine culture were Escherichia coli in 48 cases and staphylococcus in one. Scintigraphy showed changes consistent with acute pyelonephritis in 27(55.10%) children. The abnormality was bilateral in 17(63%) and unilateral in 10(37%) patients. Among these total 44 abnormal kidneys, scintigraphy demonstrated solitary cortical defect in 29(65.91%) kidneys of which 13 defects were in the upper pole, 11 were in the lower pole and 5 in the mid zone, multiple defects in 6(13.64%) kidneys and diffuse decreased uptake in 9(20.45%) kidneys (Figure.1.).

Of the 27 children with abnormal DMSA scan, 20(34 kidneys) were available for follow-up evaluation. Follow-up scintigraphy showed complete recovery in 21 of 34(61.76%) kidneys and renal scarring in 13 of 34(38.24%) kidneys. Initial and Follow-up scan appearances of these 34 kidneys are shown in Table-I. Renal scarring were found to develop in 5 of 7 kidneys (71%) with diffuse decreased uptake, 2 of 5 kidneys (40%) with multiple cortical defect (Figure.2.) and 6 of 22 (27%) with solitary defect.

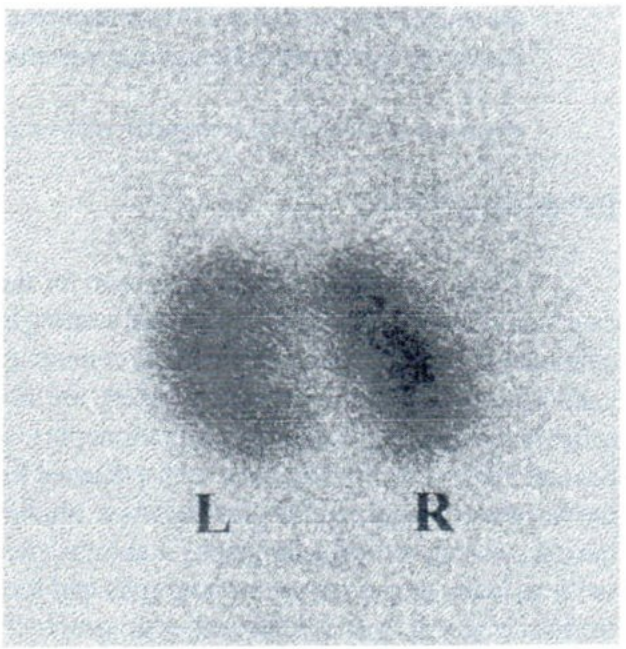

Fig.1 Acute pyelonephritis in left kidney (L) in a 5 years old boy showing diffuse decreased uptake of isotope. Right kidney (R) is normal.

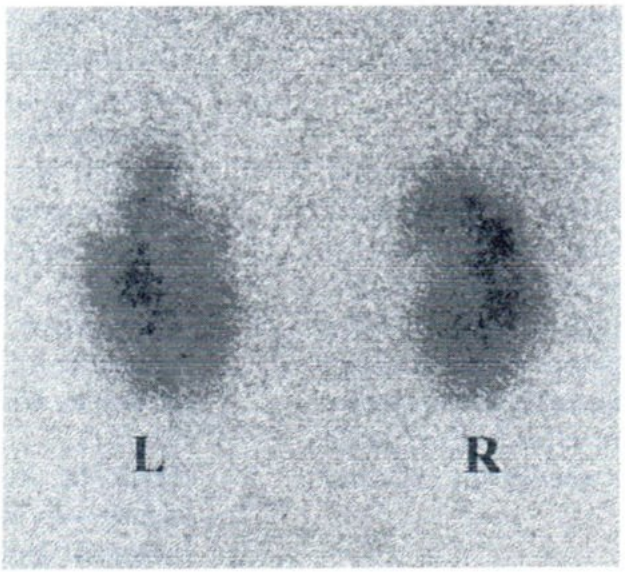

Fig.2 Follow-up scintigraphy 6 months after acute infection in a 9 years old girl showing multifocal scars in upper pole of left kidney (L). Right kidney (R) is normal. During acute infection uptake defect was observed in each pole of left kidney.

Table-I Results of follow-up scintigraphy

Scintigraphic findings	Initial scan	Follow-up scan	
		Normal	Scar
Solitary cortical defect	22	16	6
Multiple cortical defect	5	3	2
Diffuse decreased uptake	7	2	5
Total	34	21	13

DISCUSSION

Renal scarring from acute pyelonephritis is an important cause of chronic renal failure in the pediatric population. Studies have shown that renal cortical scintigraphy using Tc-99m-DMSA is a highly sensitive and reliable technique for the detection of acute pyelonephritis and post-infection scarring.[5,6] It can detect the site and the extent of acute infection, which is helpful for the management of these patients. In our study, DMSA scan showing changes consistent with acute pyelonephritis were found in 55.10 % of the children. This is lower to other reports.[7,8] Here in our study, cortical imaging were done using parallel hole collimator that may not be able to detect smaller cortical defect. Of the DMSA abnormalities, unifocal

lesion showed highest incidence and the majority of these lesions occur in the upper or lower poles. This finding is consistent with other studies.[5]

Follow-up DMSA study were performed at six months of initial scan as healing of the acute lesion usually occur within this time.[9] Scars were seen in 38.24% of the acute lesions in our study population, which were close to other studies.[10] Recent studies reported that once acute pyelonephritis has occurred, ultimate renal scarring is independent of the presence or absence of vesicoureteral reflux.[2,10] Here, in the study, we do not consider whether the child has vesicoureteral reflux or not.

Renal scars developed more in kidneys with diffuse parenchymal involvement followed by multiple cortical lesions and solitary cortical defect in this study population. This is in good agreement with other study.[11] From the observation, it may be assumed that, children with diffuse parenchymal abnormalities at the time of acute infection has more chances to develop scars than that of multiple or single cortical lesion.

CONCLUSION

Tc-99m-DMSA renal cortical scintigraphy is a simple, safe and noninvasive imaging modality for the detection, localization and follow-up of acute pyelonephritis. The DMSA renal scan findings at the time of acute pyelonephritis may predict which kidneys are at risk for renal damage due to subsequent renal scarring.

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IMAGING FINDINGS OF LOWER LIMB KLIPPEL-TREUNAUNAY SYNDROME

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PURPOSE

To report the imaging findings of Klippel-Trenaunay Syndrome(KTS), a rare congenital malformation characterized by the triad of capillary malformations, atypical varicosities or venous malformations, and bony or soft tissue hypertrophy usually affecting one extremity. In addition, management options are discussed.

MATERIALS & METHODS

We retrospectively reviewed the clinical characteristics and findings of 4 patients with KTS, including 3 female and 1 male patients, age range between 7 months to 7 years, who underwent assessment at Siriraj hospital, Mahidol University between January 2003 and July 2005. All patients presented with limb hypertrophy and port-wine stain. Imaging modalities including roentgenograms to detect limb length discrepancy, MRI and noninvasive arterial and venous evaluation (MRA and MRV) and imaging during percutaneous intervention are reviewed. Only 1 patient underwent leg angiography and intraarterial gelfoam embolization for subcutaneous hemorrhage.

RESULTS

All three features of KTS including capillary malformations (port-wine stains), varicosities or venous malformations and limb hypertrophy, were presented in all of our patients (100%). Extremity pain was presented in 1 patient (25%). Limb-length discrepancy was presented in 1 patient (25%). Atypical lateral vein was found in 1 patient (25%) without presentation of sciatic vein. No arteriovenous shunt was detected. Spontaneous cutaneous hemorrhages were presented in 2 patients (50%) which in one case needed angiography and intraarterial gelfoam embolization to stop bleeding. Direct Alcohol injection into abnormal superficial vein performed in all patients with successful obliteration of some venous pouches in the 2 patients.[1] The patients who fail to respond to alcoholic injection are those who have no cystic venous compartment. We also achieved to reduce extremity pain, which is occurred in one of our patient. In the literatures, the causes of pain in KTS occurred by many problems, but in these specific patients, the extremity pain is suggested to be due to growing pain. Ours intervention is performed with caution due to we realized that the condition may be worsen if we occluded the dilated superficial collateral vein which function as a normal vein drainage in association with deep vein hypoplasia.[2,3] Lifelong clinical follow-up is mandatory in this group of patients because the natural history of venous and lymphatic malformations is one of a progressive enlargement. Unfortunately our following-up period was not long enough, the long term therapeutic result was still uncertain.

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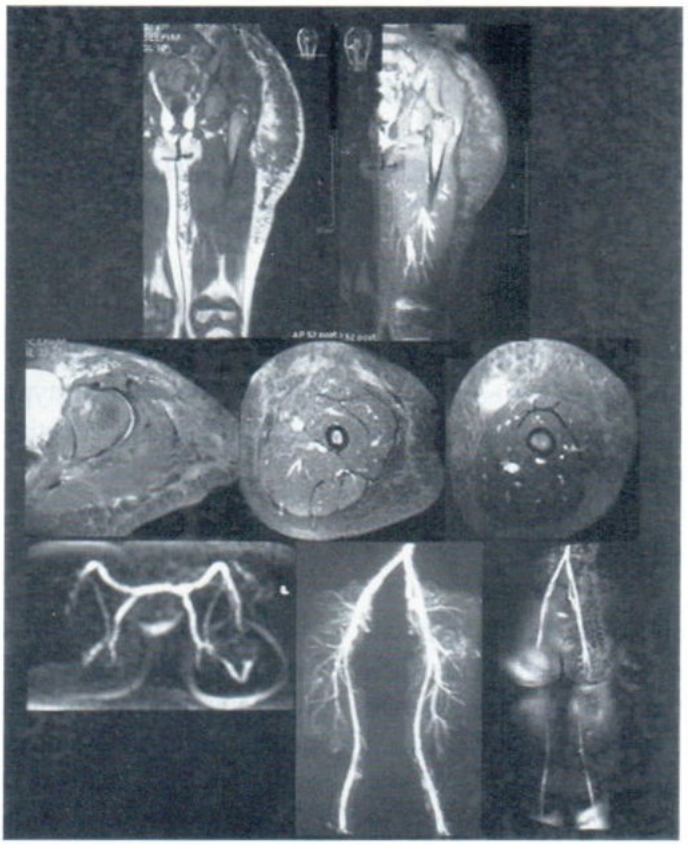


Fig. 1 A 3-year-old female patient presented with progressive enlargement of Lt. thigh and erythematous macule since birth. MRI and MRA Lt. leg showed a soft tissue mass lesion from the level of iliac brim to the above knee region with surpentine flow void structures. Heterogenous soft tissue and vascular enhancement was noted on post Gadolinium injection study. Relative minimal larger of Lt. leg arteries were observed.

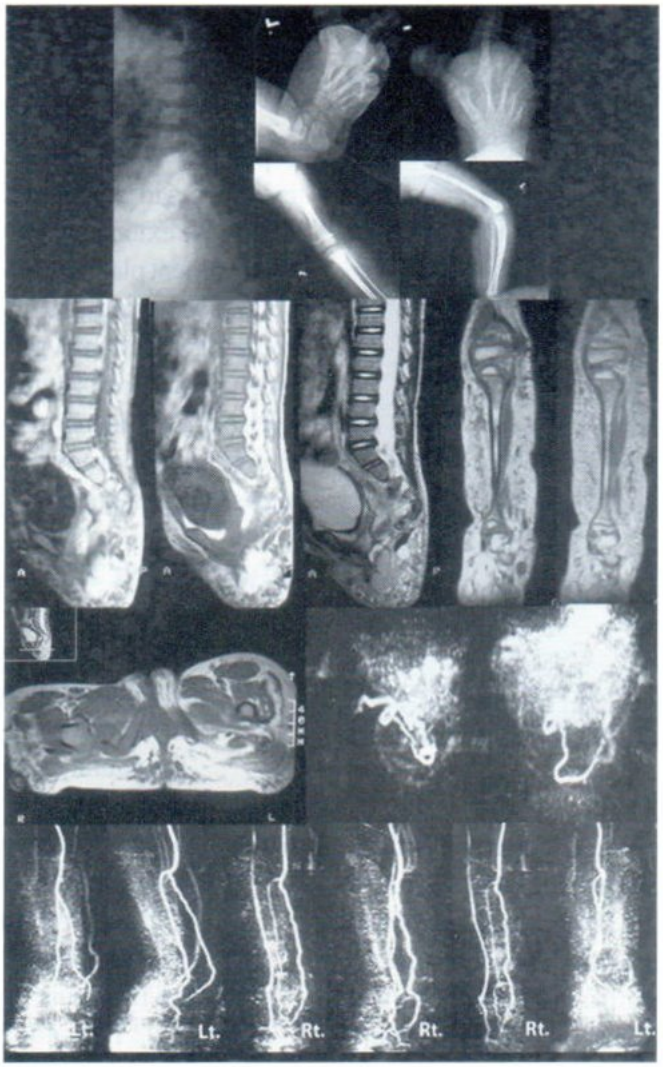
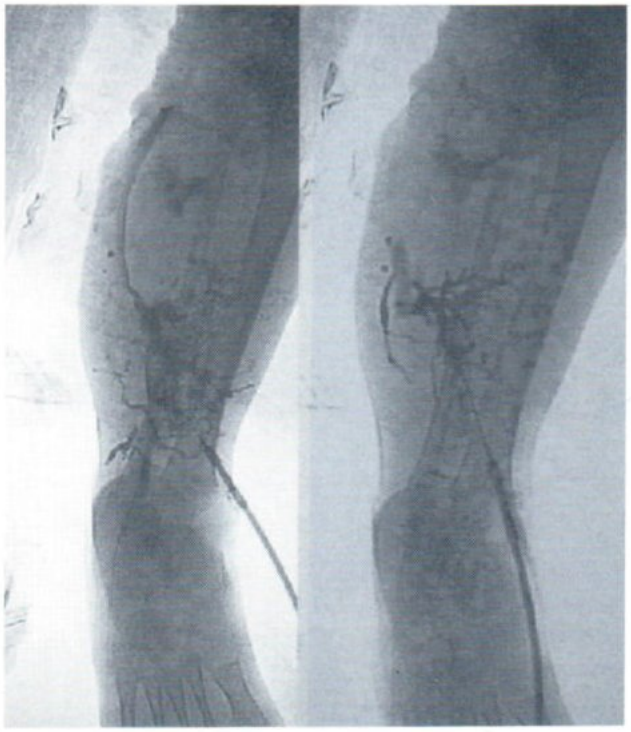


Fig. 2 A 7-month-old female patient presented with Lt. leg enlargement, bilateral club feet and both legs hemangioma with occasional subcutneous bleeding. Plain film of lower back, Lt. leg, Lt. foot, MRI and MRA of both legs showed asymmetry enlarged Lt. leg and deformed Lt. foot with subcutaneous soft tissue enlargement and multiple dilated flow void structures extended from Lt. buttock to Lt. foot. No internal pelvic organ involvement was observed. No arteriovenous fistula was detected. Rt. leg was also affected in a lesser degree.



3 (A) 3 (B)

Fig. 3 A 2-year-old male patient presented with Rt. leg enlargement and hemangioma with occasional bleeding since birth. Imaging during percutaneous intervention; (A) venography, (B) during alcoholic injection showed abnormal dilated veins with atypical lateral vein without presentation of sciatic vein. Intervention was performed with caution.

CONCLUSION

The multimodalities imaging approach especially MRI, MRA and MRV of the abnormal extremities in patient of KTS, allows detailed analysis of disease extension and provide crucial information for treatment planning. Even if most patients with KTS should be managed conservatively, occlusion either by direct injection of sclerosing agents such as direct alcohol injection or surgical resection of symptomatic varicosities or localized superficial venous malformations can give some benefit of relief symptoms for these group of patients.

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RECANALIZATION OF DURAL VENOUS SINUS THROMBOSIS ASSOCIATED WITH CRANIAL DURAL ARTERIO-VENOUS FISTULA FOLLOWING TREATMENT

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INTRODUCTION

Pattern of venous drainage from dural arteriovenous fistulae (DAVFs) has been shown to affect natural history and clinical presentation of these lesions. Dural venous sinus thrombosis is usually found associated with aggressive type of DAVF. Recanalization of these dural venous sinuses thrombosis after treatment is rare. We report two cases of DAVF with dural venous sinuses thrombosis and recanalization of dural venous sinuses thrombosis in patient with aggressive cranial dural AVF after complete obliteration of shunts following treatments; Partial surgery and 2 sessions of transarterial embolizations in the first case and multiple sessions of successful transarterial embolizations of dural AVF and affected sinuses in the second case. The patients' symptoms completely disappeared after follow up. Treatment aim of DAVF is certainly to get rid of the shunts. After closure of the shunts, unpredictable satisfactory recanalizing thrombosed dural venous sinuses are apparent. Dural arteriovenous fistula in patients of this single-institution series were diagnosed between 1995 and early 2005, total patients were 74 and treatment by embolizations were instituted in 54 of them.

BACKGROUND AND PURPOSE

Cranial DAVF can occur with or without dural venous sinus thrombosis. Moreover, this dural venous sinus thrombosis is often associated with an aggressive cranial DAVF, which was dictated by their patterns of venous drainage with features such as cortical venous reflux, galenic drainage and venous congestion. Recanalization of these thrombosed sinuses after treatment were relatively rare, yet, some of those had been earlier mentioned by Ronie, et al.

We retrospectively reviewed 2 unusual cases of recanalizing thrombosed dural venous sinuses after treatment of aggressive cranial DAVFs and discuss their significances and frequencies of such a presentation.

MATERIAL & METHODS

Between 1995 and early 2005, 74 patients with intracranial DAVF were diagnosed and 54 of them had been treated in our institution. From our databases, we found only 2 patients had recanalizing thrombosed dural venous sinuses after treatment of aggressive cranial DAVF with dural sinus thrombosis.

DAVF = Dural arterio-venous fistulae.

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CASE REPORTS

Case 1

A 19-year-old woman presented with progressive seizure after postoperative craniotomy for removal of blood from posttraumatic epidural and subdural hematoma. She was failed for medication to control the seizure. CT scan conducted at our institution suspected of DAVF at skull base and dilated Rt.superior ophthalmic vein, Rt.superficial middle cerebral vein and prominent Rt.cavernous sinus (Fig 1A-C). There was no intracranial hemorrhage. Same day diagnostic angiography was performed and was showed to have cranial DAVF supplied by Lt. middle meningeal artery (MMA), Lt.occipital artery and Lt.superficial temporal artery (Lt.STA) branches of Lt.external carotid artery (ECA) (Fig 2A-D) and from small meningeal branches of Rt.superior cerebellar artery (Rt.SCA), branches of Rt.vertebral artery (Rt.VA) (Fig 2E-F), anterior falx cerebri arteries from bilateral ophthalmic arteries of each internal carotid arteries (ICA) (Fig 2G-H). Complete occlusion of Rt.transverse sinus (TVS), partial occlusion of Lt.transverse sinus and sigmoid sinus (SS) and cortical vein reflux are shown on venous phase angiogram (Fig 2I). Venous drainage was major via Rt.Trolard vein into cavernous sinus, into superior ophthalmic vein and partial occluded Lt.transverse sinus into Lt.jugular vein (Fig 2J-K). Due to almost complete occlusion of bilateral transverse sinuses, transarterial route for embolization was selected. From a transarterial approach, Embolizations were done with 0.5mL 40% mixture of N-butylcyanoacrylate (NBCA, Braun, Melsungen, Suisse) and Lipiodol at feeding Lt.MMA (Fig 2L-M) and with Ivalon (300-500 microns, Cook, U.S.A.) embolization at Lt.STA. Immediate control angiogram of Lt.ECA showed significant reduction of feeding arteries and rather slower flow of DAVF at middle 1/3 of SSS with reduction of cortical venous reflux (Fig 2N-O)

Follow up of 2 weeks interval Lt.ECA angiography demonstrated more prominent of a residual osteodural Arteriovenous shunt (AVS) at the same middle 1/3 of SSS fed by Lt.occipital artery which was immediately transarterial embolized by Ivalon (150-300 microns, Cook, U.S.A.) (3A-B). Control Lt.ECA angiography after embolization was obtained and showed complete absent of osteodural AVS (Fig 3C). Rt. and Lt.ICA angiographies showed no significant changed of cerebral cortical venous reflux pattern of ECA (External carotid artery), ICA (Internal carotid artery) and cerebral congestion (3D-G). After the procedure, our management teams had made a decision to refer the case for surgery to disconnect this dural arteriovenous shunt at the middle 1/3 of SSS.

Follow up of 1-month interval showed minimal residual DAVF supplied by posterior meningeal branch of Rt.superior cerebellar artery and artery of falx cerebelli without cortical venous reflux. Partial recanalization of posterior upper 1/3 of SSS was noted (Fig.4A-E)

Follow up of 6 months to 2 years interval Rt.ICA angiographies and MRV of brain showed compatible finding of complete absent of DAVF with further recanalization of posterior 1/3 of SSS (Fig.5A-E).

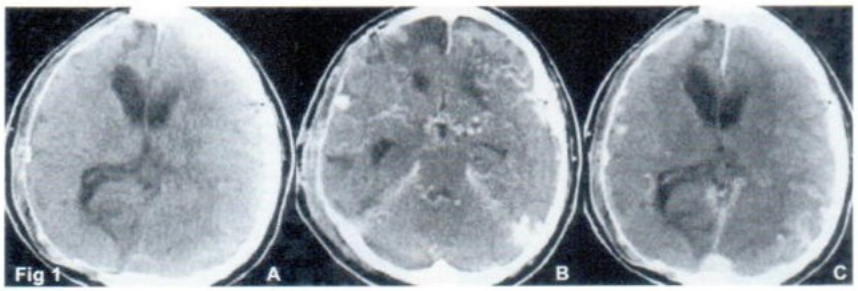

Fig 1 A-C Cranial CT scan showed abnormal vascular structure at skull base and dilated Rt. superior ophthalmic vein, Rt.superficial middle cerebral vein and prominent Rt.cavernous sinus without Intracranial hemorrhage (ICH).

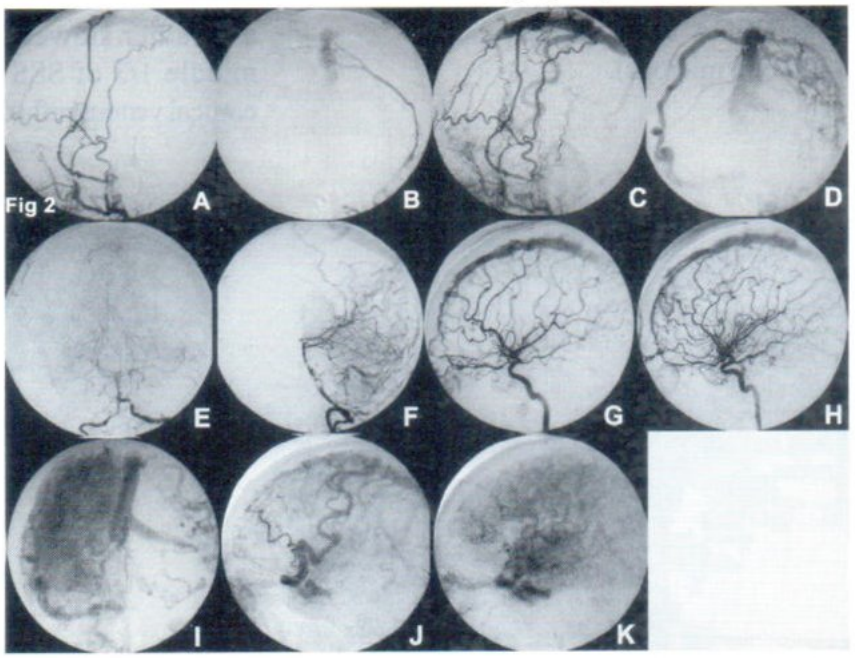

Fig 2A-K Lt. external carotid angiography showed early visualization of middle 1/3 part of superior sagittal sinus (SSS) by DAVF supplied by Lt. middle meningeal artery (MMA), Lt. occipital artery and Lt.superficial temporal artery (Lt.STA). Vertebral angiography showed small meningeal branches of Rt. superior cerebellar artery (Rt.SCA). Rt. & Lt. internal carotid angiographies showed other feeding arteries of DAVF; anterior falx cerebri arteries from bilateral ophthalmic arteries of each internal carotid arteries. Complete occlusion of Rt. transverse sinus (TVS), partial occlusion of Lt. transverse sinus and sigmoid sinus (SS) and cortical vein reflux are shown on venous phase angiogram. Venous drainage was major via Rt.Trolard vein into cavernous sinus, into superior ophthalmic vein and partial occluded Lt. transverse sinus into Lt.jugular vein.

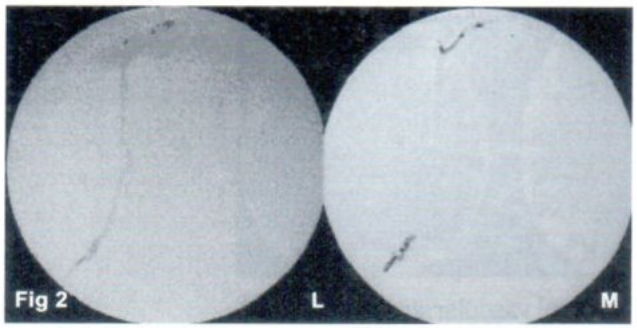

Fig 2 L-M Lt. Middle meningeal artery (MMA) and Lt.superficial temporal artery (STA) superselective embolization by 40% mixture of NBCA and Lipiodol and Ivalon (300-500 microns).

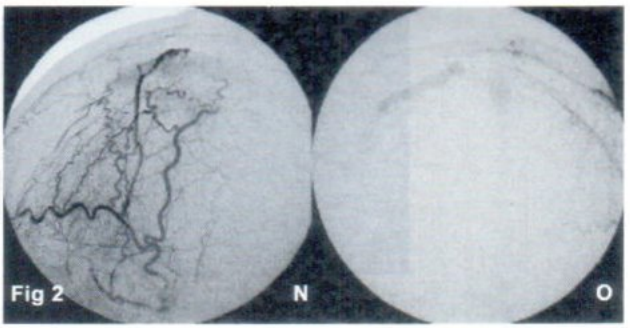

Fig 2 N-O A control angiogram of Lt.ECA was obtained after embolizations and showed significant reduction of feeding arteries and rather slower flow of DAVF at middle 1/3 of SSS and reduction of cortical venous reflux.

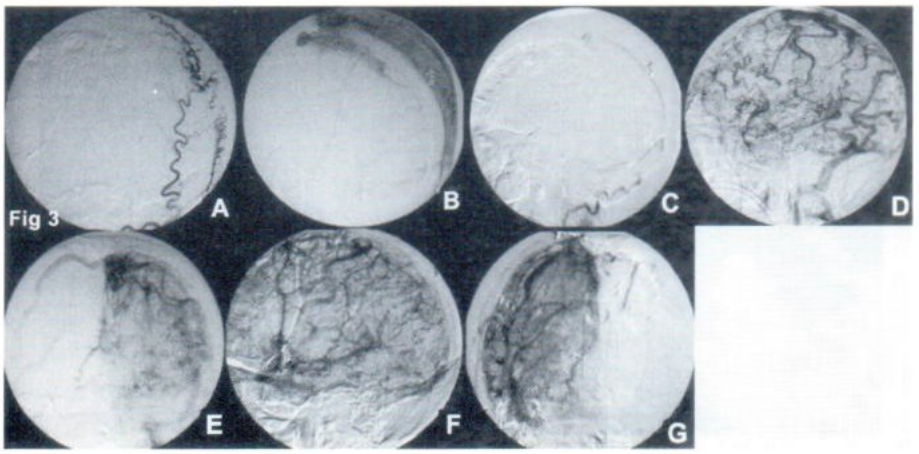

Fig 3 A-G Followed up 2 week-intervals, Lt. ECA angiography demonstrated a residual osteodural Arteriovenous shunt (AVS) at the same middle 1/3 of SSS fed by Lt. occipital artery which was embolized by Ivalon (150-300 microns. (3 A-B). Control Lt. ECA angiography after embolization showed complete absent of osteodural AVS (Fig 3 C) without significant changes of cerebral cortical venous reflux pattern and cerebral congestion (3 D-G).

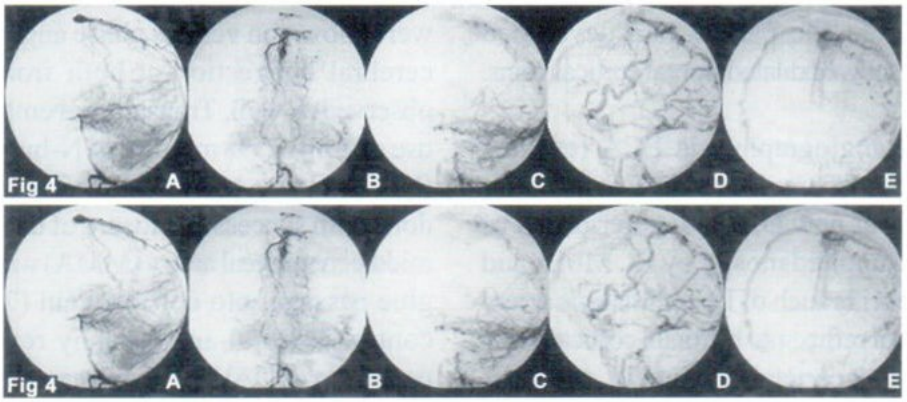

Fig 4-5 Follow up of 1-month interval showed minimal residual DAVF supplied by posterior meningeal branch of Rt.superior cerebellar artery and artery of falx cerebelli without cortical venous reflux. Partial recanalization of posterior upper 1/3 of SSS was noted (Fig.4 A-E)

Followed up of 6 months interval, Rt. ICA angiogram and MRV showed compatible finding of complete absent of DAVF with further recanalization of posterior 1/3 of SSS (Fig.5 A-D).

Followed up of 1 & 2 years interval, Rt. ICA angiogram showed no significant changed of findings as compared with study on 6-month interval follow up (5 E).

Case 2

A 55-year-old man presented with chronic headache and progressive Lt.visual field defect following previous long-timed skull fracture. Cerebral angiogram of bilateral ICA, Vertebral arteries and bilateral External carotid angiography showed DAVF at posterior half of SSS which was thrombosed. These DAVF were supplied especially by bilateral middle meningeal arteries (MMA) and transosseous branches of bilateral Superficial temporal arteries (STA) (Fig 6 A-B). Retrograde drainage into ecstatic cortical veins particularly of Rt.parietooccipital lobe, represented venous congestion was also noted. Venous drainage of normal brain was rerouting from cortical veins into cavernous sinus with draining via dilated superior ophthalmic vein, and from Basal vein of Rosenthal, vein of Galen and vein of Trolard into straight sinus (Fig 6 C-D). Embolization was decided using transarterial route due to complete occlusion of middle part of SSS. Embolizations with the used of 1.5 mL 25% mixture of N-butylcyanoacrylate (NBCA, Braun, Melsungen, Suisse) and Lipiodol were done at feeding Rt. Middle meningeal artery (MMA) and 3 branches of superficial temporal artery (STA) (Fig 6 E-F). Immediate control bilateral angiography showed nearly total occlusion of the DAVF and better opacification of cerebral parenchymal blush which was empties in venous drainage. Improvement of venous congestion was also noted (Fig 6 G-I).

Follow up of 2 months interval cerebral angiography showed complete cure of DAVF with posterior half of SSS thrombosis. However, Redistribution of normal brain drainage from cavernous sinus to superior ophthalmic vein and to Labbe vein into sigmoid sinus was visualized.

1 year later, the patient had developed seizure. CT brain showed dilated frontal cortical veins.

Cerebral angiography via ECA revealed complete occlusion of previous DAVF at posterior half of SSS yet, but new DAVF at anterior 1/3 of SSS was found, supplied mostly by Rt. MMA and anterior falx cerebri branch of Lt. ophthalmic artery of Lt.ECA. Cortical reflux into bifrontal cortical veins empty into Lt.sphenoparietal vein into Lt. cavenous sinus with rerouted to Lt.superior ophthalmic vein and recanalization of posterior half of SSS (Fig 7 A-D) were shown on venous phase angiogram. Minimal cerebral congestion at both frontal lobes were observed as well. Transarterial embolization by the use of 1 mL 25% mixture of N-butylcyanoacrylate (NBCA, Braun, Melsungen, Suisse) and Lipiodol was done with successful closure of the shunt fed by Rt. middle meningeal artery (MMA) with no evidence of glue passage into cortical vein (7 E). Immediate control cerebral angiography revealed complete occlusion of DAVF and decreased cerebral congestion (7 F-K). Normal cortical vein could be seen in normal venous drainage right now.

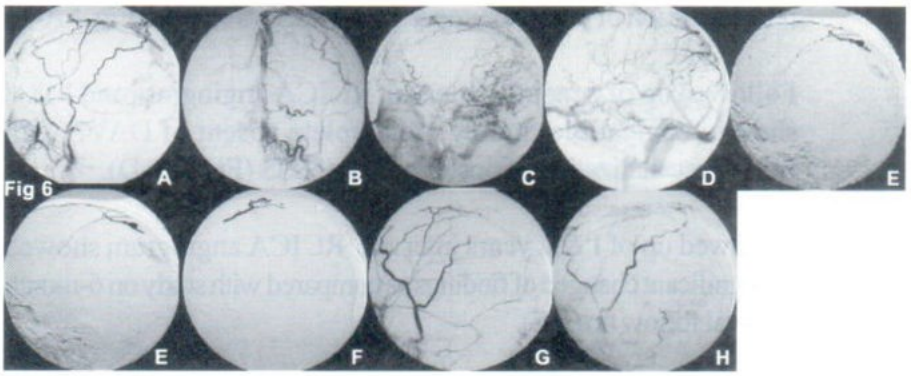

Fig 6 A-I Cerebral angiogram and bilateral External carotid angiography showed DAVF at posterior half of SSS with thrombosis of SSS supplied especially by bilateral middle meningeal arteries (MMA) and transosseous branches of bilateral Superficial temporal arteries (STA) (Fig 6 A-B) and retrograde drained into ectatic cortical veins particularly of Rt.parietooccipital lobe and venous congestion, rerouting from cortical veins into cavernous sinus to dilated superior ophthalmic vein. (Fig 6 C-D). Rt.MMA and branches of Rt.STA Glue embolization (Fig 6 E-F). Controlled bilateral ECA angiography showed nearly total occlusion of the DAVF. Both ICA angiographies showed better opacification of cerebral parenchymal blush which were empties in venous drainage. Improvement of venous congestion was noted (Fig 6 G-I).

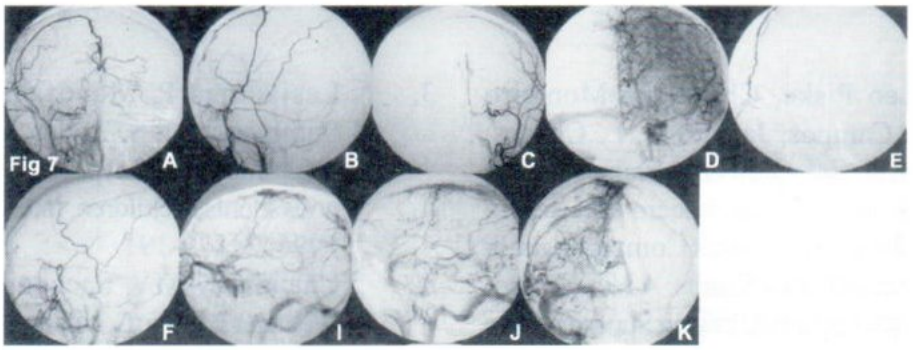

Fig. 7 A-K Cerebral angiography and ECA angiography revealed complete occlusion of previous DAVF at posterior half of SSS yet, but new DAVF at anterior 1/3 of SSS was found, supplied major by Rt. MMA and anterior falx cerebri branch of Lt.ophthalmic artery of Lt. ECA with cortical venous reflux into bifrontal cortical veins empty into Lt.sphenoparietal vein into Lt.cavenous sinus with rerouted to Lt.superior ophthalmic vein and notably of recanalization of posterior half of SSS (Fig 7 A-D). Minimal cerebral congestion at both frontal lobes was observed as well. Glue embolization with successful closure of the shunt fed by Rt. MMA with no evidence of glue passage into cortical vein (7 E). Control cerebral angiography revealed complete occlusion of DAVF and decreased cerebral congestion (7 F-K). Normal cortical vein could be seen in normal venous drainage right now.

RESULT

Dural venous sinus thrombosis associated with cranial DAVF is found in approximately 15%.[2] Most of these occurred associated with aggressive DAVF. Recanalization of thrombosed dural venous sinus associated in cranial DAVF was infrequently appeared after closure of DAVF. However, 2 of 54 treated patients were found in our institute. The etiology of these unpredictable satisfactory recanalizing thrombosed dural venous sinuses may explain by previous mentioned dural venous sinus compartment in DAVF concept described by Ronie et all which classified dural venous sinuses into 2 types: sinus septation and accessory sinuses. By our observation, we agreed and supported that theory. Ours 2 cases could be represented for DAVF associated with septated dural venous sinus. Thus, superselective embolization of this abnormal sinus segment, which was believed to be the cause of following DAVF, could allowed us to cure the lesion while preserving the remainder normal venous sinus.

CONCLUSION

2 cases of recanalization of dural venous sinus thrombosis in aggressive type, acquired cranial dural AVF after treatment were reported. By our observation, this pattern was not well frequently occurred and discussed.

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FOCUSED ASSESSMENT WITH SONOGRAPHY FOR TRAUMA (FAST) PERFORMED BY EMERGENCY MEDICINE RESIDENTS AT NOPPARAT RAJATHANEE HOSPITAL

Chuda SRISUKONTH, M.D.[1]

ABSTRACT

Focused Assessment with Sonography for Trauma or FAST is an excellent initial screening test for assessment of trauma patients. Nowadays, FAST performed by non-radiologist clinicians is widely accepted. At Nopparat Rajathanee Hospital, FAST training is offered to our emergency medicine residents in order to compare and discussed the results to those performed by experienced radiologists.

The study took place from January to September 2005 which FAST exams were performed on thirty patients by two emergency medicine residents using experienced radiologists as a gold standard. The findings are as followed: 84.21% sensitivity, 90.90% specificity, 86.66% accuracy, 94.11% positive predictive value and 76.92% negative predictive value.

FAST performed by emergency medicine residents is satisfactory in general. It is considered sufficient as a screening test. Nevertheless, in some cases with negative results, further diagnostic workup is recommended.

INTRODUCTION

During the past several years, the number of trauma patients has increased. Rapid diagnoses and treatments have played a significant role in mortality and morbidity rate reduction. Physical examination alone has proven to be frequently unreliable in the diagnosis for trauma patients especially when they are unconscious or when there are multiple injuries.[1,2] Focused Assessment with Sonography for Trauma or FAST is widely accepted as the effective mean for a screening test.[3-6] Currently at Nopparat Rajathanee Hospital, radiologists are not available around the clock to perform FAST. However, it has become acceptable and reasonable for trained emergency physicians and trauma surgeons to perform FAST reliably.[2,7-12] The accuracy rate of their results is reportedly very close to those performed by radiologists.[13,14] Nevertheless, there has been ongoing discussion on the minimum number of FAST cases performed by the emergency physicians and surgeons during their training to become competent and the FAST training curriculum itself.[15,23]

Nopparat Rajathanee Hospital has been offering the trial FAST training to emergency medicine residents. The objective of the study is to compare the FAST results performed by trained emergency medicine residents and experienced radiologists (performed more than 4,000 comprehensive sonography).

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PATIENTS AND METHODS

The study has been conducted from January through September 2005. Initially, the training was offered to two emergency medicine residents. The program is modified from those offered at the University of Vermont15 shown in Table 1.

Table 1 Standard for performance and interpretation of FAST training at Nopparat Rajathanee Hospital

Phase I	Three hours of continuing medical education in ultrasound The topics to be considered include: 1. Physics a. Fundamental of the ultrasound wave b. Pulse echo principle c. Angle of ultrasound beam d. Acoustic impedance/tissue density attenuation-absorption and scatter 2. Instrumentation a. Transducer frequency-effect on resolution and penetration b. Gain/attenuation c. Power, depth, and magnification d. Image orientation e. Image display-freeze frame and real time modes
Phase II	Three hours of practical training of normal patients with negative results
Phase III	Three hours of practical training on ascites patients with positive results

Phase I lasts three hours. This segment includes physics of ultrasound wave, instrumentation, basic knowledge in performing FAST and result interpretation.

Phase II lasts three hours as a practical training. Participants have a hand-on FAST examination on four healthy volunteers whose results are only negative.

Phase III lasts three hours as yet another practical training. At this time, however, participants perform FAST on four ascites patients whose results are only positive.

After the completion of the 3 Phases training montioned above, during official hours when both emergency residents and radiologists are available, and when it does not interfere with patient management. In the case of trauma patients, the study is performed during the secondary survey of Advanced Trauma Life Support (ATLS) by using the Aloka SSD -1100 (Japan) ultrasound machine available in the Emergency Department. In non-trauma cases, patients with possible ascites such as those with cirrhosis, hypoalbuminemia or chronic renal failure are selected. The studies took place at the Radiology Department using the B-K 3535-B08 (Denmark) ultrasound machine with 3.5 or 5 MHz. transducer.

The application of transducer is based on what recommended by Ma OJ, et al.[16] The transducer is

placed on subxyphoid region (1), right upper quadrant (2), right flank (3), left upper quadrant (4), left flank (5) and suprapubic region (6) in order to find fluid in pericardial space, hepatorenal fossa, right paracolic space, splenorenal space, left paracolic space and pelvic cavity respectively as shown in Figure 1.

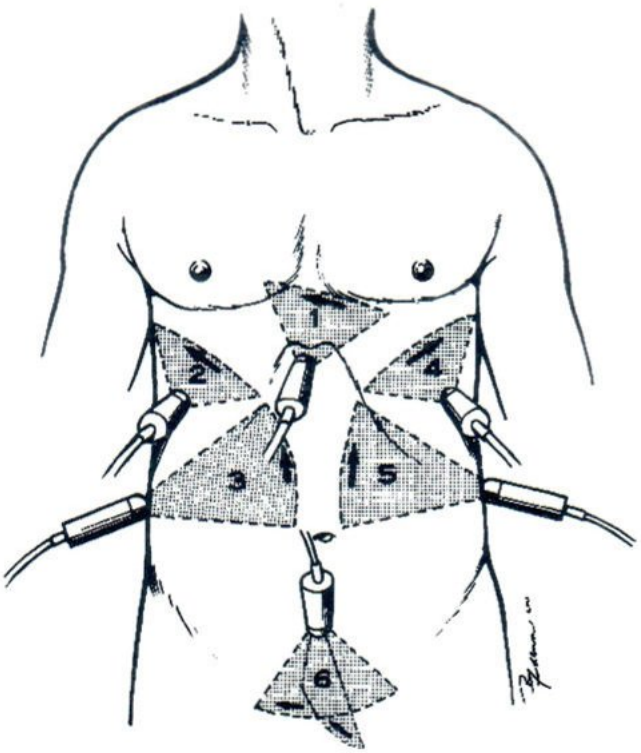

Fig. 1 Application of transducer for FAST recommended by Ma OJ, et al.

One of the two of emergency residents periodically report results either negative or positive for each point of every peritoneal space mentioned above. Radiologists then perform the FAST exams using the same ultrasound machine after emergency residents have completed their tasks. At this point, radiologists are not aware of the results performed by emergency residents. Once both teams have completed, their results are compared. If there are discrepancy on their results in one or more peritoneal spaces, the FAST exams are performed again by emergency residents under the supervision of radiologists for proctor purposes only.

The FAST result is considered positive when fluid is found in one or more spaces while it is considered negative when fluid is not found in any space at all.

The FAST results performed by emergency residents upon their training completion are analyzed using standard formulas17 for sensitivity, specificity, accuracy, positive predictive value, negative predictive value, using experienced radiologists' results as the gold standard.

RESULTS

FAST exams are performed on thirty patients: 20 male (66.66%) and 10 female (33.33%). The average age of the patients is 41.97?15.72 years old. There are 14 non-trauma (46.66%) and 16 trauma (53.33%) patients. The causes of injuries were seven motor vehicle accidents, four fall from heights, four hit by objects and one assault.

The comparison of FAST results performed by two emergency residents and radiologists is shown in Table 2. There are sixteen true positive, ten true negative, one false positive and three false negative cases. Prevalence, sensitivity, specificity, accuracy, positive predictive value and negative predictive value of FAST results are shown in Table 3.

Table 2 FAST results and scan time performed by emergency residents (er) and radiologists (R)

				er	R	er	R	er	R	er	R	er	R	er	R		er	R
Patients	Age(y)	Sex	History	Subxyphoid		Hepatorenal		Rt.paracolic		Splenorenal		Lt.paracolic		Pubis		FAST results			Scan time	
1	41	m	fall from height	n	n	p	p	p	p	p	p	p	p	p	p	P	P	TP	8	3
2	42	m	fall from height	n	n	p	p	p	p	n	p	p	p	p	p	P	P	TP	7	3
3	43	m	hit by object	n	n	n	n	n	n	n	n	n	n	n	n	N	N	TN	10	3
4	43	m	fall from height	n	n	n	n	n	n	n	n	n	n	n	n	N	N	TN	11	3
5	34	m	assault	n	n	p	p	p	p	p	p	p	p	p	p	P	P	TP	16	5
6	40	m	hit by object	n	n	n	n	n	n	n	n	n	p	n	p	N	P	FN	10	3
7	28	f	motor vehicle accident	n	n	n	n	n	p	n	n	n	n	n	p	N	P	FN	7	3
8	54	m	motor vehicle accident	n	n	p	p	p	p	p	p	p	p	p	p	P	P	TP	10	4
9	19	m	hit by object	n	n	p	p	p	p	n	p	p	p	p	p	P	P	TP	8	4
10	43	f	nontrauma	n	n	p	p	p	p	p	p	p	p	p	p	P	P	TP	8	4
11	32	f	motor vehicle accident	n	n	n	n	n	n	n	n	n	n	n	n	N	N	TN	5	3
12	22	m	fall from height	n	n	p	p	p	p	n	p	p	p	p	p	P	P	TP	7	3
13	48	m	nontrauma	n	n	n	n	n	p	n	n	n	n	p	p	P	P	TP	6	4
14	27	f	motor vehicle accident	n	n	n	n	p	p	n	n	n	n	n	p	P	P	TP	10	3
15	51	m	motor vehicle accident	n	n	p	p	p	p	n	p	n	p	p	p	P	P	TP	10	4
16	15	m	hit by object	n	n	p	p	p	p	n	p	p	p	n	p	P	P	TP	9	4
17	42	f	nontrauma	n	n	n	n	n	p	n	n	n	n	p	p	P	P	TP	8	4
18	29	f	nontrauma	n	n	n	n	n	p	n	n	n	n	p	p	P	P	TP	5	3
19	59	m	nontrauma	n	n	n	n	n	p	n	n	n	n	n	n	N	P	FN	5	3
20	22	m	nontrauma	n	n	n	n	n	n	n	n	n	n	n	n	N	N	TN	5	2
21	73	m	nontrauma	n	n	n	n	n	n	n	n	n	n	n	n	N	N	TN	5	3
22	43	f	nontrauma	n	n	n	n	n	n	n	n	n	n	n	n	N	N	TN	8	3
23	44	m	nontrauma	n	n	n	n	n	n	n	n	n	n	n	n	N	N	TN	6	3
24	38	m	nontrauma	n	n	n	n	n	n	n	n	n	n	n	n	N	N	TN	5	2
25	57	m	nontrauma	n	n	p	n	n	n	n	n	n	n	n	n	P	N	FP	5	2
26	81	m	motor vehicle accident	n	n	n	n	n	n	n	n	n	n	n	n	N	N	TN	9	4
27	44	f	nontrauma	n	n	n	p	p	p	n	n	p	p	p	p	P	P	TP	8	3
28	56	f	nontrauma	n	n	n	n	n	n	n	n	n	n	n	n	N	N	TN	6	2
29	21	m	motor vehicle accident	n	n	p	p	n	n	p	p	n	n	p	p	P	P	TP	7	3
30	68	f	nontrauma	n	n	p	p	p	p	p	p	p	p	p	p	P	P	TP	5	3

P = Positive, **N** = Negative, **TP** = True Positive, **TN** = True Negative, **FN** = False Nagative

Table 3 Summary of findings

Number of patients enrolled	30
True positives	16
True negatives	10
False negatives	3
False positive	1
Prevalence	63.33%
Sensitivity	84.21%
Specificity	90.90%
Accuracy 86.66%	
Positive predictive value	94.11%
Negative predictive value	76.92%
Scan time	
Emergency residents	7.63±2.44 mins
Radiologists	3.2±.70 mins

DISCUSSION

FAST examination is technically distinct from comprehensive diagnostic sonography in which diagnoses are often entertained and formally accepted. It is a clinically focused sonography performed in trauma patients to answer a specific question that is whether the fluid that represents hemoperitoneum present or not.

Although sonography has been used for the torso evaluation of trauma patients by surgeons in Japan and in Europe especially Germany for three decades, FAST was initially developed and designed principally for non-radiologists by Rozycki et al.[11,20] in 1993 and has only been gaining popularity during the last decade.[9,18,19]

It has been reported that the FAST results performed by well-trained non-radiologist clinicians are satisfactorily parallel to those performed by the radiologists.[13-14]

The result of our study is relatively close to the studies of those who have been well-trained.[13,23] The high expectation of our results may be due to:

1. The result of gold standard selection. In the studies where sensitivity and specificity are high, the low sensitivity tests such as clinical outcomes are usually selected as one of the gold standards. Radiologists are certainly among the low sensitivity tests unlike diagnostic peritoneal lavage (DPL) and CT scan.

2. High sample prevalence of 63.33% comparing to 5-43% of other studies.[21,22] High prevalence means high number of positive cases. This may result in steep learning curve which allows us to reduce the number of cases in FAST training to achieve satisfactory level.

3. Long scan time. The average scan time in our study is 7.63±2.44 minutes as compared to less than four minutes by others.[18,23,24] Our long scan time is likely to yield more accurate results which make our emergency residents appear to be skillful and well-trained.

Nevertheless, negative predictive value is 76.92% which is not very high. This means only 76.92% of patients with negative FAST exams have no hemoperitoneum. For this reason, further diagnostic workup such as DPL or CT scan is recommended.

CONCLUSION

At Nopparat Rajathanee Hospital, the FAST examination and interpretation training is offered to emergency medicine residents. We have found that their results are satisfactorily accurate and reliable in comparision with the results of experienced radiologists. This means that their FAST exams can be used as the primary screening test at some levels of confidence. However, even with negative FAST results especially in the patients who might have intra-abdominal injury, further diagnostic workup is recommended.

ACKNOWLEDGEMENTS

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PAPILLARY THYROID CARCINOMA IN A LACTATING MOTHER

Dr. M.A. TAHER[1]

ABSTRACT

Radioiodine ablation of post-thyroidectomy remnant was delayed successfully in a lactating mother suffering from papillary carcinoma of thyroid gland. However, daily dose of thyroxine (100 micrograms per day) was enough to suppress her cancer for many months as shown in the case reported below documented by clinical followups and whole body scans.

KEY WORDS: Iodine-131 therapy, thyroid cancer, lactation.

INTRODUCTION

The ideal treatment of papillary thyroid carcinoma is surgery followed by I-131 ablation and daily thyroxine thyrapy. It is well-known that radioiodine administered to lactating woman will appear in the milk and may be harmful to the baby. Radioiodine ablation was delayed in a lactating mother who had a near-total thyroidectomy for papillary carcinoma of thyroid.

CASE REPORT

A 32-years-old woman with long-standing multinodular goitre and biopsy-proven papillary carcinoma of the thyroid gland who had a near-total thyroidectomy on 07 Oct. 2002 came for remnant ablation by I-131 therapy.

The patient was still breast-feeding her thirteen-month-old baby. As papillary cancer is slow-growing and breast-feeding is important up to two years, we advised her to start thyroxine 100 micrograms daily in empty stomach and to come after eleven months for radioiodine ablation. The patient lived in Bhurungamari (Kurigram), and could not procure thyroxine tablets regularly-she stopped it on 23 Oct. 2002 and restarted it on 17 Nov. 2002. She was clinically well and did not come to us. On 10 April 2005, she came to our centre and we gave her 10 mCi of I-131. A 24 hour whole body scan showed most of the radioiodine concentrated in the thyroid region. She is on thyroxine therapy and long-term followup is being done.

DISCUSSION

Report on the excretion of radioiodine in human breast milk have appeared since 1952.[1-4] Rubow and Klopper treated a lactating mother with papillary thyroid cancer and concluded that it might be necessary to suppress lactation completely before I-131 is administered in order to obtain the therapeutic effect reguired.

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NOSOCOMIAL PNEUMONIA; RADIOLOGIC DIAGNOSIS IN PRANANGKLOA HOSPITAL

SIRIPORN POOLSIRI, MD.[1]

ABSTRACT

Nosocomial Pneumonia is one of the important complications commonly found in the hospital. Early diagnosis and prompt treatment is essential to decrease morbidity and mortality rate of nosocomial pneumonia. This retrospective study was performed in Pranangkloa Hospital to determine the accuracy of chest radiograph. 163 patients diagnosed as nosocomial pneumonia in Pranangkloa Hospital between October 2001 and September 2004 were included in this study. Medical records and chest radiographs of the patients were studied and reviewed. Percentage and Chi-square were used in data analyses.

Finding: Nosocromial pneumonia is commonly occur in male (61.35%) and old aged group (45.39%). The complications were usually found in neurosurgical patients (39.26%) and medical patients (36.20%). The common causative agents are polymicro-organism (56.44%) and gram-negative bacilli (73.23%). Strong association between nosocomial pneumonia and mechanical ventilators was found (93.90%). Chest radiograph was performed in only 65% of the patients, in which positive finding, pulmonary infiltration/consolidation, were 74.53%. Infection in lower lobe, and multifocal or entirely infection were detected in 43.50% and 29.11%, respectively. Chest radiograph is found to be highly accurate in the diagnosis of nosocomial pneumonia (X^2=76.57, p=0.000, α<0.05)

Conclusion: Abnormal chest radiograph is sensitive for early diagnosis of nosocomial pneumonia. Although no specific pattern of abnormal chest radiograph can be identified, strong correlation between abnormal chest radiograph and nosocomial pneumonia was clearly demonstrated, the author suggest that early radiography should be performed in any suspected cases especially in the elderly patients and the group using mechanical ventilators.

INTRODUCTION

Nosocomial pneumonia is one of the top-three problems of nosocomial infection in critically illed patients[1], particularly those in intensive care units (ICU). Nosocomial pneumonia is the second most common problems (27%), while urinary tract infection (31%), and primary blood stream infections (19%) are the first and third most common. The most common form of nosocomial pneumonia, called ventilator -associated pneumonia (VAP) is highly associated with mechanical ventilation (86%). The incidence of nosocomial pneumonia in mechanically ventilated patients (VAP) ranges from 9% to 68% and the mortallity rates ranges from 33% to 71%.[2,3] VAP is the most common types of infection in ICU patients in Europe and Latin America (45%) and is the second most common in US ICUs.[4] The diagnosis of VAP is

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complicated, limiting and challenging for the clinicians because the clinical and radiologic presentation vary: fever, leukocytosis, abnormal sputum and abnormal chest radiologic patterns are commonly found. Early institutional diagnostic for empirical antibiotic therapy can decrease morbidity and mortality,[5] especially in the severely illed patients. Culture of tracheobronchial secretion were used to guide the adjustment of the administration or withdrawal of antibiotic therapy to reduce the consumption of the drugs for lessening of the side effects, resistance, and costs.

Abnormal chest radiograph combined with one of the clinical features (fever, leukocytosis or purulent tracheal secretion) is highly sensitive but poorly specific in the diagnosis of nosocomial pneumonia.[6] To increase the specificity of clinical diagnosis, all four criterions should be included but this results in an unacceptably low sensitivity (< 50%).

The accuracy of radiographic interpretation has received little reserch interest,[7] in postmortem patients and abnormal findings. The focus of radiologic studies of VAP has been an abnormal chest radiograph, the false negative values of chest radiograph were unknown. Several specific radiographic signs have been studied and the range of sensitivity found were 87% to 100% for alveolar infiltration, 58% to 83% for air bronchogram signs, and 50% to 78% for new or worsening infiltrates. The specificity cannot be determined since the total number of cases were unknown and chest radiograph were found to be negative in some VAP patients. The likelihood of VAP is not increased by any specific radiographic sign, so the reliability of chest radiographic interpretation is low.

Despite, lack of sensitivity and specificity of chest radiographs, the daily chest radiographs are indicated on patients with acute cardiopulmonary problems and who receiving mechanical ventilation or new device.[8]

This retrospective study of chest radiographic interpretation was conducted in the patients who was diagnosed to have nosocomial pneumonia in Pranangkloa Hospital, Thailand between October 2001 to September 2004.

MATERIALS AND METHODS

The ethics commitees of my hospital have granted an approval for this study.

Patients

163 patients diagnosed as nosocomial pneumonia in Pranangkloa Hospital were included in this retrospective study, medical admission charts and chest radiographs in the first episode of nosocomial pneumonia were reviewed interpreted and analysed.

Criteria for diagnosis

The patients, admitted in the hospital for at least 48 hours who developed a new or progressive pulmonary infiltration, consolidation, cavity or new pleural effusion on the chest radiograph in association with at least two of the following findings: rales on ausculation or dullness to percussion on chest examination, new onset of purulent sputum or change in sputum character, axillary temperature greater than 38° C or under 36°C (in children under 12 months) in the absence of antipyretic treatment, cough, leucocytes in excess of 12,000/mm^3 or under 4000/mm^3, positive tracheobronchial aspiration culture (qualitative endobronchial aspiration), or positive blood culture, and the patients who were treated with empirical antibiotic therapy without supporting evidence. For children under 12 months, associated with at least two of the following symptoms e.g., apnea, trachycardia, wheezy sound, or rhonchi.

Chest Radiograph

Plain films, mainly portable chest films, which were done in +/- 2 days from the day that tracheobronchial secretion were collected by doctors or

nurses and sent to the laboratory for culture (qualitative endotracheal aspiration due to limitation of laboratory facilities and the lack of bronchoscopic specialist), and at least 48 hours after admission.

The chest films were evaluated by the author or from the reports of other radiologists in the hospital.

Data collection

Each patient's admission hospital chart was constituted retrospectively and the following data were recorded; age, sex, patient's ward (medical, general-surgical, neuro-surgical and newborn ICU), whether the patient is on endotracheal tube/tracheostomy tube with mechanical ventilator, isolation of microorganisms, mono or polymicroorganism, chest radiograph; positive or negative finding for nosocomial pneumonia, finding patterns, location, sides and pleural effusion.

Statistical Analysis

The data of age, sex, patient's ward (medical, general-surgical, neuro-surgical and newborn ICU), on mechanical ventilator or not, microorganisms isolated, chest radiograph; positive or negative, finding, location, side and pleural effusion, and the relative positive chest radiograph with nosocomial pneumonia diagnosis were analysed using statistical computerized program for research in percentages and chi-square test or Pearson Chi-Square. Statistical significance was defined as $p< 0.05$.

RESULT

A total 163 patients were retrospectively evaluated during October 2001 to September 2004, and divided mainly into two groups, adult and childhood, (newborn).

Table 1. Demographic data of the nosocomial pneumonia patients

Data		Frequency	Percent
1. Sex			
male		100	61.35
female		63	38.65
total		**163**	**100.00**
2. Age			
< 1	year	27	16.56
1-14	years	1	0.61
15-29	years	21	12.89
30-44	years	19	11.66
45-59	years	21	12.89
60-74	years	44	26.99
>75	years	30	18.40
total		**163**	**100.00**
3. Ward			
medical /ICU med		59	36.20
general-surgical/ ICU surg.		12	7.36
neuro-surgical/ ICU surg.		64	39.26
NICU (newborn)		28	17.18
total		**163**	**100.00**

100 of 163 patients were male (61.35%), 63 were female (38.65%), 27 patients (16.56%) were less than 1 year (mostly newborns; mainly were preterms (app.25-36 weeks and birth weight app. 880-3480 grams). Only one boy, 5 year-old was underlying of cerebral palsy was found. Most of the cases (77 patients, 45.39%) were the old-aged patients, older than 60 years and were admitted in particulary neuro-surgical patients 64 (39.26%),59 cases were medical patients (36.20%).

Table 2. On endotracheal tube/tracheostomy tube with mechanical ventilator of the nosocomial pneumonia patients

Data	Frequency	Percent
On tube		
No tube	153	93.87
	10	6.31
total	**163**	**100.00**

Almost all patients were on endotracheal/tracheostomy tube with mechanical ventilator 153 (93.87%).

Table 3. Microorganisms recovered from respiratory secretion of nosocomial pneumonia patients

Microorganisms	Frequency	Percent
Pseudomonas aeruginosa	58	21.56
Klebsiella species	69	25.65
Staphylococcus aureus	41	15.24
Enterobacter species	18	6.69
Acinetobacter species	52	19.33
Other	31	11.53
total	**269**	**100.00**

The most common microorganisms were gram negative bacilli 197 (73.23%), particularly Klebsiella species 69 (25.65%), others are Pseudomonas aeruginosa 58 (21.56%), Acinetobacter species 52 (19.33%) and Enterobacter species 18 (6.69%). The fourth is Staphylococcus aureus 41 (15.24%), mostly with MRSA (methecillin resistant Staphylococcus aureus). The other were Streptococcus pneumoniae, Serratia species and E.coli.

Table 4. Number of kinds of microorganisms recovered from respiratory secretion of nosocomial pneumonia patients

Microorganisms	Frequency	Percent
None	8	4.91
Monomicroorganism	63	38.65
Polymicroorganism	92	56.44
total	**163**	**100.00**

The most common types of microorganisms were mixed infection; 92 (56.44%) and single infection were; 63 (38.65%). Negative culture; 8 (4.91%) were the cases that had been diagnosed as nosocomial pneumonia and had taken empirical antibiotic therapy without tracheobroncheal secretion cultures support.

Table 5. Chest radiographic diagnosis in nosocomial pneumonia patients

Microorganisms	Frequency	Percent
1. Chest film		
Not available	57	35
Available	106	65
total	**163**	**100.00**
2. Result (pulmonary infiltration/consolidation)		
Positive	79	74.53
Negative	27	25.47
total	**106**	**100.00**
3. Distribution:Location of pulmonary infiltration /consolidation.		
Upper	10	12.66
Lower	35	44.30
Entire	23	29.11
Perihilar	11	13.93
total	**79**	**100.00**
4. Side effected		
Right	30	37.97
Left	18	22.79
Both	31	39.24
total	**79**	**100.00**
5. Pleural effusion		
None	75	94.94
Pleural effusion	4	5.06
total	**79**	**100.00**

Chest radiograph were performed in 106 patients (65%), positive finding (pulmonary infiltration/consolidation) found in 79 patients (74.53%), prominently in lower part 35 cases (44.30%), scattered, diffuse, multifocal or entirely both lung fields 23 cases (29.11%). Both sides and Rt. Side are more common. 4 cases (5.06%) show pleural effusion. Air bronchogram signs were not seen in adult but commonly seen in preterm newborns which cannot be excluded from respiratory distress syndrome

(RDS). The relation of positive chest radiograph in nosocomial pneumonia diagnosis by Pearson Chi-Square was 76.574 (p=0.000) (alpha< 0.05) and contingency coefficient was 0.565.

DISCUSSION

Nosocomial infections are defined as infections acquired during or as a result of hospitalization after 48 hours[9] which contribute significantly to morbidity and mortality[10,11] as well as costs of hospitalized patients. The most common problems are urinary infections, the second and third most common are pneumonia and blood stream infection[1] and showed device- associated infections, nosocomial pneumonias are associated with mechanical ventilator, called ventilation-associated pneumonia (VAP). The majority of nosocomial pneumonias occur in intensive care units or critically illed patients. The incidence of VAP is 9-68%[2] and mortality rate is 33-71%. Pseudomonas aeruginosa was identified as a gram-negative pulmonary pathogen in one report[12] showing uniquely high mortality (70%) as compared to the other gram-negative bacilli. Mortality rate of gram-positive organism (usually staphylococcus aureus) is lower but cannot be neglected. The majority of nosocomial pneumonias are caused by gram-negative bacilli (> 60%).[13] The common causative agents are listed in order of commonly found: Pseudomonas aeruginosa, Staphylococcus aureus, Enterobacter species, Klebsiella species, E. coli, Haemophilus influenza and Serratia marcescens. Order of causative agent varied in each study.[14] Predisposing factors of nosocomial pneumonia are intubation (short/long term),[15-17] intensive care unit (respiratory equipment, contamination of devices),[17-21] antibiotics,[22,23] surgery,[16] chronic lung diseases,[22,24] advanced-ages[15,16,25,26] and immunosuppression.[27,28]

The majority of nosocomial pneumonias appear to occur as a result of aspiration of pathogens that colonized at the mucosal surface of the upper airway.[22,29-30,43] The patients receiving gastric alkalinization to prevent stress ulcers and bleeding during hospitalization can produce extensive bacterial overgrowth in the upper GI tract, that lead to airway colonization, secondary to aspiration of gastric microflora.[31,32] Patients treated with H_2 blocker (cimetidine) show higher incidence of pneumonias than the group treated with sucrafate.[33]

Diagnosis of nosocomial pneumonia is complicated because the classic clinical finding for pneumonia, new fever, new or worse pulmonary infiltration, cough, sputum production, and elevated leukocyte count, may not be seen, while pulmonary infiltration, if found, may cause by diseases other than pneumonia, such as alveolar hemorrhage, atelectasis, pulmonary infarction, ARDS (adult respiratory distress syndrome) or hypersensitivity pneumonitis.[34] The isolation of potential gram-negative bacillary or Staphylococcus aureus pathogens from the airways cultures may be colonization (isolation of an organism from a patient who has no signs or symptom of infection) or if actual infection is pneumonia or tracheobronchitis. There is no clear clinical manifestation in the diagnosing nosocomial pneumonia.

Microbiologic evaluation of patients with suspected nosocomial pneumonias may or may not be helpful. Sputum or respiratory secretions obtained by endotracheal aspiration are often contaminated with upper airway flora, so the cultured result may not reflect the microbiology of infected lung disease. Blood cultured may help to differentiate between contaminating and infecting bacterial isolated from sputum but the positive rate are in lower than 10% of nosocomial pneumonia patients. Invasive methods, bronchoscopy with quantitative laboratory analysis, such as protected-specimen brush (PSB), bronchoalveolar larvage (BAL) have been described potentially useful for improving diagnostic specific for nosocomial pneumonias.[34,35] However there are some disadvantages of PSB and BAL in clinical application[36] (hypoxemia, sinus tachycardia and minor bronchial hemorrhage) and these techniques require specialists and special equipments, which may delay in sample collection and initiation of empiric antibiotic

therapies,[36] there is a high false-negative rate in the culture result. Non–invasive quatitative technique, quatitative endotracheal aspiration (QEA) culture is less complicated, lower costs and relatively sensitive (70%) and specific (72%) method to diagnose VAP but the negative predictive value of QEA cultures were higher (72%) when compared with that obtained using PSB (34%).[37] One study showed that the outcome of VAP treatment was not influenced by the technique used for microbial investigation.[44]

Diagnosis of this infection is more complicated in the neonates, for the signs are usually subtle and nonspecific. Definitions of sepsis used in adult and pediatric patients usually cannot be applied to neonates, due to the fact that they rarely get febrile and their vital signs are affected by several factors other than infection such as cold, stress, hypoglycemia, pain and hypoxia. Therefore, sepsis is usually suspected in a newborn just based on poor feeding or a state of not being well, or sometimes just based on major or minor risk factors in the history[38, 39] On the other hand, neonate prone to be infected by fatal nosocomial microorganisms if they are hospitalized and received invasive procedures such as intubation or catheterization, especially preterm.

In this study, nosocomial pneumonias found prominently in male 100 (61.35%), advanced age patients, more than 60 years, 77 (45.39%), neurosurgical and medical patients (36.20% and 39.26%, respectively) mostly critically ill or impaired concious patients. Almost all patients of nosocomial pneumonias are found to be associated with mechanical ventilator via endotracheal tube or tracheostomy tube 153 (93.9%). The other risk factors are old patients or the patients who prone to aspiration, such as impaired consciousnes or stroke.[40] Because nosocomial pneumonias are usually associate with aspiration,[22,29,30,43] so polymicroorganisms are prominent. Polymicroorganisms are two times more common than monoorganism in this study which is correspond with Rouby et al.study.[42] Microorganisms (may be oropharyngitis or tracheobronchitis) were gram -negative bacilli 197 (73.23%) as same as other studies[10,13,14] and mainly in Klebsiella species, followed by Pseudomonas aeruginosa, Acinetobacter species and Enterobacter species. Gram positive microorganism is staphylococcus aureus and frequent MRSA). Only 106 chest radiographs (65%) could be collected, because some patients received initially empirical therapy without performing chest films. The positive finding, pulmonary infiltration/consolidation, in 79 patients (74.53%), the other signs[41] as air bronchogram sign, silhouette sign, cavities, fissure abutment or atelectasis were not seen. Distribution, prominent in lower part 35 (44.30%), and follow by scathered diffuse, multifocal or entirely both lung fields 23 (29.11%), associated with aspiration. Involving both sides and right side were eminent. A few cases had pleural effusion, 4 (5.06%). Air bronchogram signs were not seen in adult but commonly seen in preterm newborns, but cannot be excluded from respiratory distress syndrome (RDS) pattern, so the radiograph in the preterm newborns suspected of nosocomial pneumonias were very really complicated, history of risk factors may be helpful.[38, 39] The relation of positive chest radiograph in nosocomial pneumonia diagnosis by Pearson Chi-Square was 76.574 ($p=0.000$) ($alpha< 0.05$) and contingency coefficient was 0.565, meaning the positive chest radiographs are useful to diagnose nosocomial pneumonia.

There are some limitations in this study due to retrospective design, chest radiographs were not performed on the day that the tracheobronchial secretion were collected (+/- 2 days) and some other noninfectious diseases such as alveolar hemorrhage, atelectasis, pulmonary infarction, ARDS (adult respiratory distress syndrome) or hypersensitivity pneumonitis and used qualitative endotracheal aspiration, can depict the same abnormal patterns like pneumonia, causing over estimate of nosocomial pneumonia diagnosis and positive chest radiograph.

CONCLUSION

The nosocomial pneumonia is the most common type of infection in critically ill patients, inadequate or delayed antimicrobial treatment result in high mortality rate. Early diagnosis is important but it is very complicated due to the classic clinical finding for nosocomial pneumonia; (new) recurrent fever, cough, changing sputum production and radiologic pattern and elevated leukocyte count may not be detected. The positive chest radiograph interpretation, pulmonary infiltration/consolidation, is helpful to increase the specificity.

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LACTATION FAILURE IN MILD HYPOTHYROIDISM

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ABSTRACT

Thyroid hormones are essential for many body functions. Recently we found a primiparous woman with lactation failure and mild hypothyroidism. We like to report this case considering the rarity of this association.

INTRODUCTION

Hypothyroidism may present with various features e.g. somnolence, loss of memory, hoarseness of voice, dry rough skin, constipation, carpal tunnel syndrome, anorexia, menstrual irregularities and infertility.

CASE REPORT

A woman of age 30 yrs. came to our centre with the complaint of neck swelling. Her thyroid scan with 99m Tc O_4 showed simple goitre grade 1b with rapid flow of radioisotope (fig.1) but serum levels of thyroid hormones were low (T_3 = 0.8 nmol/L T_4=30 nmol/L) and thyrotropin (TSH) was raised (6.35mIU/L). She told that she could not perform breast -feeding for her only child 2 years ago. She had no other complaint.

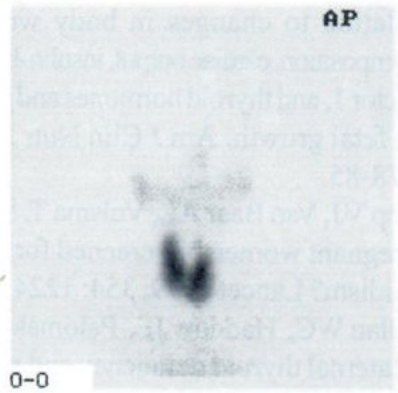

Fig.1 Thyroid scan showing simple goitre grade 1b.

DISCUSSION

Manifestations of adult hypothyroidism result in multisystems involvement. Common symptoms including goitre, weakness, coarse dry skin, lethargy, slow speech, eyelid edema and cold intolerance can be detected clinically. Less common manifestations are constipation, hair loss, coarse hair, peripheral edema, hoarseness, anorexia, thick tongue, memory impairment, skin pallor, bradycardia, slow relaxation of deep tendon areas, galactorrhea and psychiatric disturbance. In conditions of mild iodine deficiency,[1] the serum levels of free T_4 steadily decreases during gestation, while in iodine sufficiency there is only a slight (15%) decrease by the end of gestation. As a consequence serum thyroid-stimulating hormone (TSH) levels increase progressively resulting in 20-30% increase of thyroid volume during gestation, a figure twice higher than in conditions of normal iodine supply. In moderate iodine deficiency, the anomalies are of the same nature but more marked.[2]

Pregnant women comprise the most vulnerable population group with respect to iodine deficiency, because of its causative link with cretinism, an irreversible defect resulting from severe iodine deficiency in utero. For this reason, the elimination of cretinism is one of the most important aims and monitored indices of success of community iodine supplementation programs.[3]

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In humans, T_4 is already found in the first trimester coelomic fluid from the 6th week of gestational age, a long time before the onset of fetal thyroid function, which occurs at the 24th week of gestation. The number of T_3 (triiodothyronine) receptors and the amount of T_3 bound to the receptors in the whole brain increase about 10-fold between 10 and 18 weeks, also before the onset of fetal thyroid function. At term, about 20-50% of cord serum T_4 is still of maternal origin. Maternal screening of thyroid function should be considered seriously as a part of routine antenatal check up.

Administration of thyroxine to hypothyroid patients should preferably be on an empty stomach-concurrent administration with iron salts, antacids, calcium carbonate (including milk), sucralfate, cholestyramine and soy-based formulas may decrease absorption of thyroxine.[4] While most patients take a daily dose, the long half-life of thyroxine lends itself to longer dosing intervals, such as alternate daily dosing. Once-weekly dosing is also possible for poorly compliant patients, although a slightly larger dose than seven times the normal daily dose may be required. [5] Lof et al confirmed that serum concentrations of free T_3 and free T_4 decrease during pregnancy and observed a significant relation between changes in free T_3 and increases in basal metabolic rate (BMR) in gestational week 32.th It may be part of a regulation with the goal of maintaining an appropriate metabolic rate in the woman, perhaps by counteracting the stimulating effect on energy metabolism apparently associated with a high body fat content in pregnancy.[6-12]

American Thyroid Association (ATA) recommends:

1. Pregnant mothers with detectable thyroid autoantibodies and normal thyroid function are at an increased risk for miscarriage and for postpartum thyroid diseases.
2. Pregnant mothers with thyroid hormone deficiency or TSH elevation during pregnancy may have children at risk of mild impairment in their intellectual function and motor skills, and
3. Pregnant woman being treated with thyroid hormone replacement often require a 30-percent to 50-percent increase in their thyroid hormone doses.

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SONOGRAPHIC APPEARANCE OF INTUSSUSCEPTION

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INTRODUCTION

Intussusception may be diagnosed by ultrasound in which its characteristic feature is an onion-like formation,[1] or a soft tissue mass with concentric layers of echogenicity produces a donut or target sign on transverse images or a pseudokidney sign on longitudinal images.[2-5]

CASE REPORT

A 5 month-old boy was referred for ultrasonography (USG) of a mass in the left iliac fossa. He had vomiting for about 12 hours. On USG, it was found that both the renal and the hepatobiliary systems were normal in echotypes, but an oval mass is present in the left iliac fossa with concentric layers of echogenicity (Fig.1). Diagnosis of intussusception was made at USG, which was confirmed at emergency laparotomy. The child had an uneventful recovery.

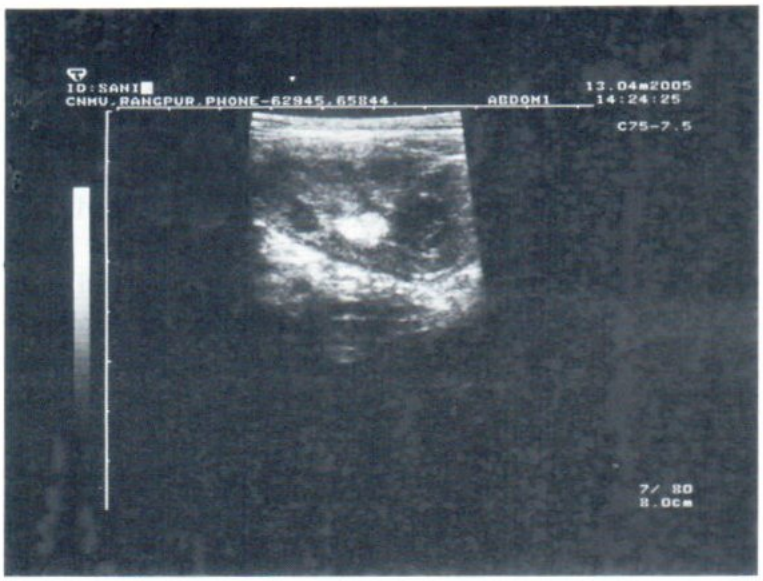

Fig.1 USG of Intussusception.

DISCUSSION

Intussusception is prolapse of proximal segment of bowel (intussusception) into an adjacent distal segment (intussusception). It causes 1% of all bowel obstruction. It is common in infants (95%) than in adults (5%). Adult intussusception has an underlying cause in about 90% cases, but in children it is mostly idiopathic. The etiology can be classified into the major headings of (a) neoplastic, (b) post-surgical

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(e.g. adhesion, bowel wall edema), (c) miscellaneous (e.g. Meckel's diverticculum, coeliac disease, AIDS related gastrointestinal disorder) and (d) idiopathic.[6] The central echoes are apparently compressed mucosa of the intussusception head, and the various layers and concentric rings may represent mesentery and bowel wall drawn into the intussusception.

Clinical presentation of adult intussusception is variable, most often chronic intermittent abdominal pain. Other symptoms include vomiting, nausea, melena, constipation, fever and weight loss. Symptoms may last several weeks to several months. Physical examination is often unremarkable. Plain X-ray abdomen may show non-specific findings, e.g. signs of bowel obstruction with an associated soft tissue mass. Most patients with idiopathic intussusception are between 3 months and 2 years of age. Signs and symptom include pain, vomiting, blood per rectum, and a palpable abdominal mass.

Hydrostatic or pneumatic reductions are successful in 75-85% of cases. During hydrostatic reduction, the rule of 3s is used: 3 attempts; 3 minutes of intermittent fluoroscopy for each attempt; bag placed 3-4 feet above the tabletop. Mean pressures during air insufflation should not exceed 120 mm Hg at rest.

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ISOTOPE RENOGRAMS IN A LACTATING MOTHER AND A SMALL INFANT

Dr. M.A. TAHER[1]

ABSTRACT

Usually we do not perform the nuclear medicine investigations in pregnant women, lactating mothers and neonates. However, in some critical situations we are compelled to do these with good results as depicted by two isotope renograms, one in a lactating mother and another in a small infant of age 3 months. We report these cases considering their rarity.

INTRODUCTION

Individual kidney functions are best assessed by DTPA renogram (diethylene triamine pentaacetic acid labelled with 99 metastable technetium), and the radiation dose is only one-tenth of plain X-ray and one-hundredth of intravenous urography (IVU). Excretion of radioactivity in breast-milk was noted following injection of ^{99m}Tc-DTPA, however, isotope renogram was done usefully in lactating mother and neonates in England and U.S.A..[1,2,3] Before a rediopharmaceutical is administered to a woman of child-bearing age, it is important to find out (a) if the woman is pregnant or (b) if she is breast-feeding and infant.[4] Recommendations applicable after the administration of radiopharmaceuticals to a nursing mother often specify that she should discontinue nursing, either of a limited period or completely. Any interruption of a few hours or longer necessitates expression of milk to avoid discomfort of congestion. Not every mother is able to express milk effectively. After a prolonged interruption it may be very difficult to resume feeding. It is therefore vital to disturb the breast feeding routine as little as possible. The biological half-life of ^{99m}Tc-DTPA is only 1- -2 h due to the fast excretion by the kidney[5] and one would expect little activity to be available for transferation into the milk.

CASE REPORT 1

A woman of 25 years came with complaint of pain in the left lower abdomen. She had a baby of 4 months by Caesarean section (in a Clinic), but it was not breast-fed due to lactation failure. The gamma camera renogram (Siemens, Germany) done after 5 milli-Curies of ^{99m}Tc-DTPA, I. V., showed obstruction in left renal tract (27.6%) and normal right kidney (72.4%). (Fig.1)

CASE REPORT 2

A boy for age 3 months came with a palpable lump in left loin which was increasing gradually over the last 2 months. Renogram (0.5-mCi of ^{99m}Tc-DTPA I.V.) reveals mild obstruction in left kidney (30.3%) and normal right kidney (69.7%). (Fig.2)

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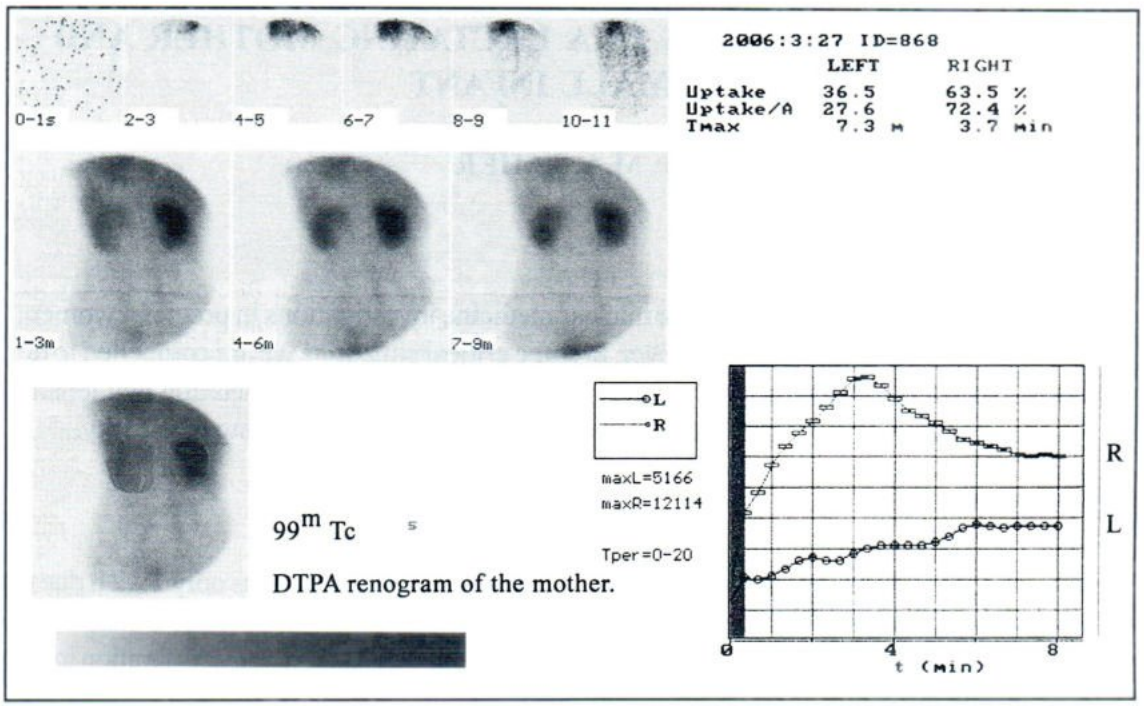

Fig.1 Renogram of Case 1.

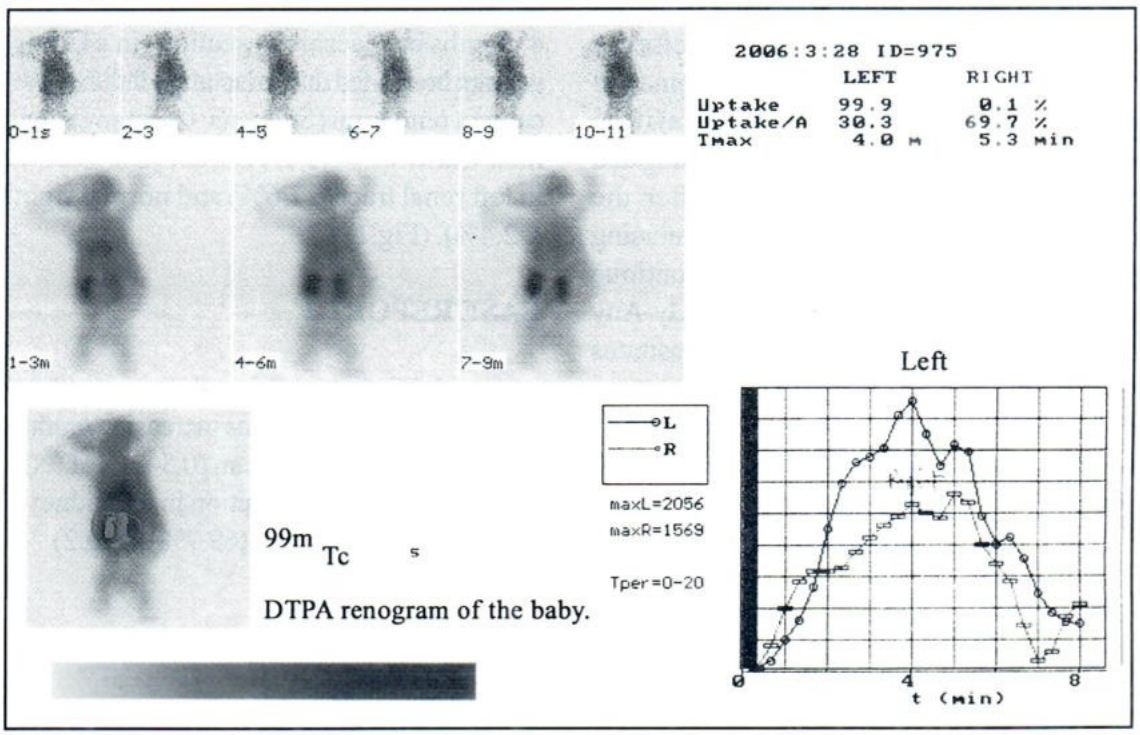

Fig. 2 Renogram of Case 2.

DISCUSSION

In 1985, Mountford at al[1] performed isotope renogram in a lactating mother for infected renal calculus and Kass et al[2] performed renogram in 34 children aged 1 week to 16 years for hydronephrosis. However, Homsy et al showed that diuresis renograms performed in early infancy correlated poorly with follow-up examination at 3 to 6 months and suggested that the washout response on the initial examination should not be used to determine the need for surgery.[6] Therapeutically Koff and Campbell concluded that most infants whose hydronephrosis was discovered by prenatal ultrasound could be managed non-operatively.[7] Gordon et al questioned the role of surgery because many neonatal hydronephrotic kidneys improved spontaneously and those that did have surgery did not show significant functional improvement.[8] Sine 85% to 90% of affected neonates may appear entirely normal on physical examination, prenatal detection of ureteropelvic junction obstruction permits early therapy of a correctable lesion that may otherwise remain unrecognized for years.[9] Obstruction frequently occurs at the ureteropelvic junction, the site of the first bifurcation of the ureteral bud. This represents the most common cause of neonatal hydronephrosis.[10]

CONCLUSION

DTPA renogram is a reliable investigation to assess individual kidney functions in the initial diagnosis and subsequent follow-ups. As the radiation dose is small, it can be performed in lactating mothers and neonates also quite safely.

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