Iran J Public Health, Vol. 44, No.3, Mar 2015, pp.407-411

Case Report

Early Onset of Tuberous Sclerosis with Chylous Ascites: A Case Report

Hosein DALILI [1], ***Elahe AMINI*** [2], ***Parvin AKBARI ASBAGH*** [3], ***Tahereh ESMAEILNIA SHRIVANY*** [1], ***Nikoo NIKNAFS*** [2], ***Fatemeh NAYYERI*** [2], ***Mamak SHARIAT*** [2], ***Saharnaz TALEBIAN*** [1], ***Naser AKBARI ASBAGH, *Vafa GHORBAN SABAGH*** [1]

1. *Family Health Institute, Breastfeeding Research Center, Tehran University of Medical Sciences, Tehran, Iran*
2. *Family Health Institute, Maternal- Fetal& Neonatal Research Center, Tehran University of Medical Sciences, Tehran, Iran.*
3. *Dept. of Pediatric, School of Medicine, Tehran University of Medical Sciences, Tehran, Iran*

***Corresponding Author:** Email: Dr.Sabagh@yahoo.com

(Received 18 Nov 2014; accepted 11 Jan 2015)

Abstract

Background: Tuberous Sclerosis Complex (TSC) is an autosomal-dominant hereditary disorder. This syndrome is characterized by tumor-like malformations in several organs, as well as the heart. This report summarizes a case of TSC in a premature infant, born at 34 weeks' gestation with ascites. After birth, multiple cardiac mass, subependymal cysts and hypopigmented macules were detected. To our knowledge, this is the first case report of early onset of TSC with chylous ascites in Iran.

Key words: Tuberous Sclerosis Complex (TSC), Subependymal cysts, Cardiac masses

Introduction

Tuberous Sclerosis Complex (TSC) is an autosomal-dominant inherited multisystem disorder with birth incidence of approximately 1 per 5,000 to 10,000 live births. This syndrome is characterized by tumor-like malformations in numerous organs, including the heart. Two chromosomal loci have been identified producing tuberous sclerosis phenotype: 9q 34.3 (TSC1) and 16p 13.3 (TSC2) (1, 2). "About two-thirds of the TSC cases are sporadic and appear to represent new mutations" (3). In these patients, the classical diagnostic triad is seizures, mental retardation, and cutaneous angiofibroma. "However, the full triad occurs in only 29% of patients; 6% of them lack all three of" (4). According to the clinical criteria defined by the Tuberous Sclerosis Consensus Conference, (5) TSC is diagnosed presenting either 2 major features- which involve hypomelanotic macules, angiofibromas (≥3), ungual fibromas (≥2), shagreen patch, multiple retinal hamartomas, cortical dysplasias, subependymal nodules, subependymal giant cell astrocytoma, cardiac rhabdomyoma, lymphangioleiomyomatosis (LAM), and angiomyolipomas- or 1 major and 2 minor features- including "Confetti" skin lesions, dental enamel pits (≥3), retinal achromic patch, multiple renal cysts, nonrenal hamartomas.

This report summarizes a case of TSC in a premature infant, born at 34 weeks' gestation with ascites. After birth, multiple cardiac mass, subependymal cysts and hypopigmented macules were detected. To our knowledge, this is the first case report of early onset of TSC with chylous ascites in Iran.

Case Report

A 23-year-old woman, gravida I, was referred to Valie-e-Asr Hospital, NICU, Tehran, Iran in 2014, at 31 weeks of gestation for evaluation of an abnormal *ascites* noted on sonography. Ultrasonographic examination revealed a single fetus with appropriate development for gestational age. However, the fetus had severe hydrops (ascites, and skin edema) (Fig. 1).

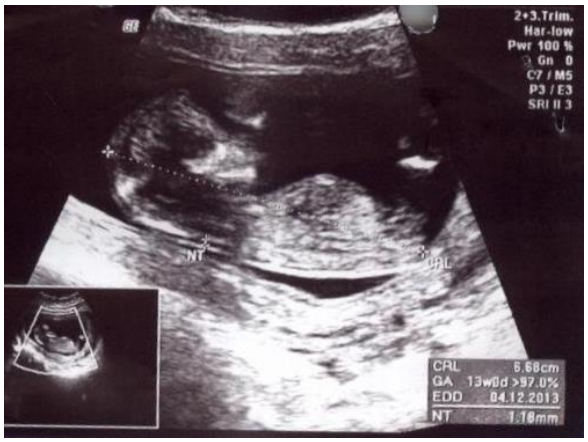

Fig. 1: The fetus at 31 weeks of gestation with ascites

In addition, mild stasis was noted on the right fetal kidney (Fig. 2). The size of both kidneys was within the normal range, and the cortical echogenicity of both kidneys was normal. The fetal cardiac rhythm was without arrhythmia and no cardiac abnormalities were found**.** A cesarean delivery was performed at 34 weeks of gestation and a female neonate was delivered.

The fetal development at the time of birth was in accordance with the gestational age. The newborn weight was 2,500 g, and the Apgar score was 9 at one and five minutes after delivery. Because of severe ascites, she was transferred to the Neonatal Intensive Care Unit, and abdominal paracentesis was performed for ascites to be removed and sent for culture and smear (Fig. 3). Following the removal of 3 liters of ascitic fluid, due to patient's rapid re-accumulation of ascites, paracentesis was required again to remove 2 more liters of fluid on day 3 of life.

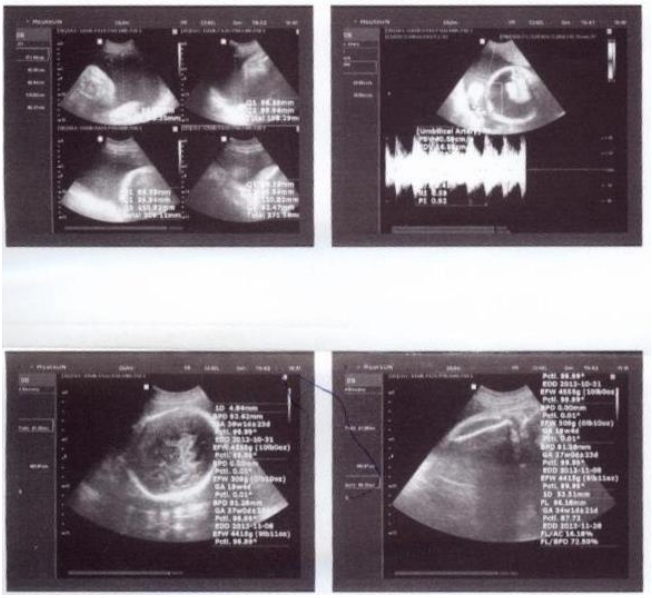

Fig. 2: Ultrsonographic features of the kidneys

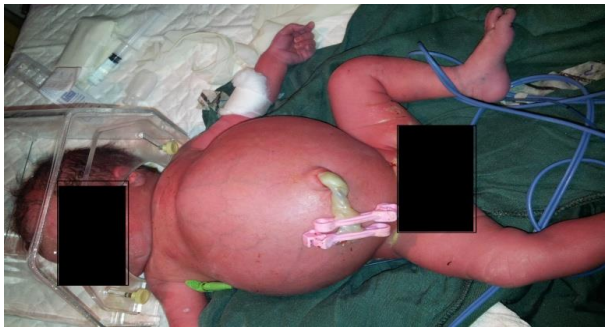

Fig. 3: Severe ascites in the newborn

Another paracentesis was repeated in the next day and 70 ml of ascitic fluid were removed. Screening tests (e.g., cell count and differential, albumin and total protein concentration) were performed on the initial specimen, which was negative for malignant cells, bacterial culture and *biochemical test.* Serological testing for maternal TORCH, human immunodeficiency virus and bacterial cultures of blood, urine and endocervical swabs were negative. Further sonographic and MRI examinations detected subependymal cysts on the right and left sides (Fig. 4). In addition, neonatal echocardiography showed multiple cardiac masses in the left and right ventricle (Fig. 5).There was no need to perform any heart medications because the heart appeared hemodynamically stable. The findings of

hydrops and cardiac tumors were consistent with tuberous sclerosis. On follow up, the infant showed hypopigmented macules on the skin (Fig. 6) and jerky movements. Both parents underwent several evaluations for TSC, including ophthalmological examination, skin examination, echocardiogram, abdominal ultrasound scan and brain CT scan, all of which have been normal.

All data exported from patient record was under parent's permission and we tried to keep data security. No clear pictures from patient were published.

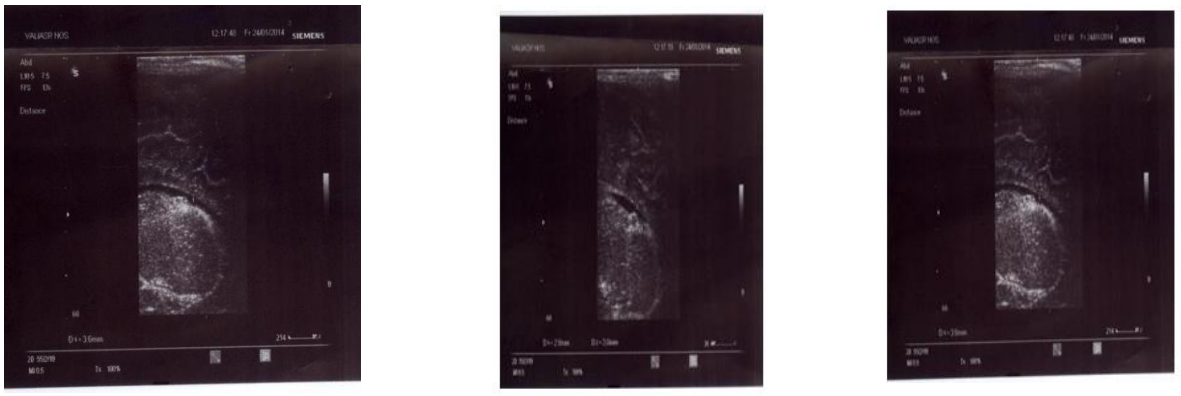

Fig. 4: Subepandymal cyst

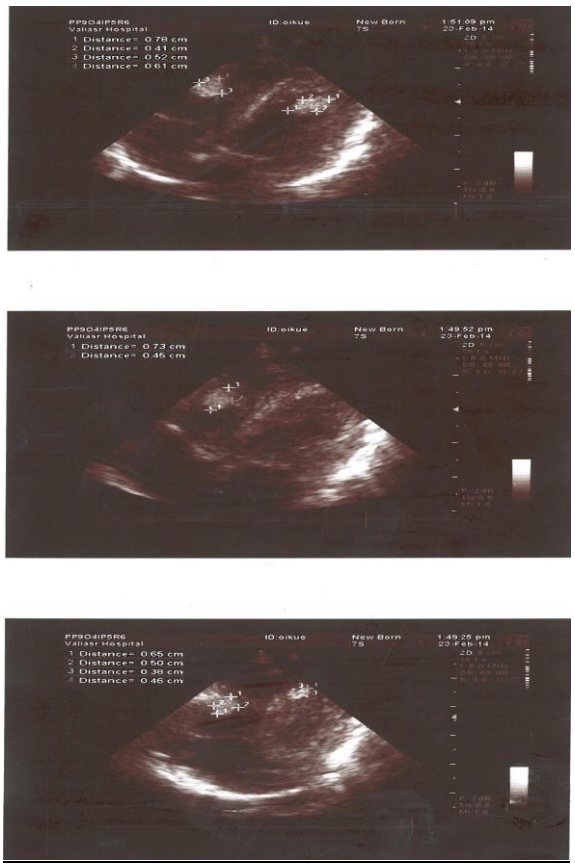

Fig. 5: Echocardiography showing cardiac mass in the left and right ventricle

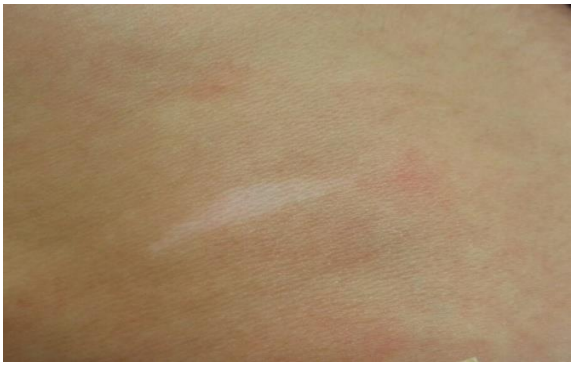

Fig. 6: Hypopigmented macule

Discussion

Chylous ascites is a very rare condition at any age, particularly in early infancy, which is commonly due to secondary conditions. After confirmation of a chylous disorder, the most important step in clinical practice is to look for its etiology. Here we report a case that was referred to our unit because of ascites at 31 weeks of gestation. After birth, further examinations showed subependymal cysts, cardiac mass, hypopigmented macules and neurologic findings. Thus based on clinical symptoms, TSC was diagnosed. TSC is an autosomal dominant genetic disorder with a variable expression

(6). The diagnosis of TSC relies on clinical and radiological investigation as well as family history (7). Symptoms of TSC vary widely from one person to another, and typically change over time within the same individual. Many patients had symptoms or signs that did not lead to immediate diagnosis. Thirty nine percent of TSC patients had missed symptoms or signs of TSC which should have led to earlier diagnosis (8). Only 28% of patients (69/234) were diagnosed within the first 6 months of life, mostly presented with a new onset of seizures or infantile spasms. Seizures were the most commonly missed symptom, noted in 19% of patients. Other missed symptoms included infantile spasms, family history of TSC, cardiac rhabdomyomas, and skin disorders.

On the other hand, cardiac tumours are extremely rare in children (0.027 to 0.17%) (9). In many cases these tumors are associated with TSC (10). The detection of a cardiac mass was the only prenatal sign of TSC in four fetuses (11, 12). Although, the prognosis of isolated cardiac rhabdomyomas is quite good and almost all tumors regress spontaneously after delivery, in cases without a family history of tuberous sclerosis, it is difficult to counsel families on the long-term prognosis (13). In the present case, the neurodevelopmental assessments at the follow up showed jerky movements. Another important diagnostic sign is the presence of multiple hypopigmented macules, which was observed in the reported case after two months. Although TSC is commonly reported to follow an autosomal dominant hereditary pattern with variable expressivity, our case seems to be sporadic as there was no family history (14). No medical therapy for tuberous sclerosis has been found yet. There are only attempts to treat certain clinical manifestations to prevent complications (15). Due to multisystem involvement, patients require periodic examinations by several different specialists.

Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

Acknowledgements

The authors declare that there is no conflict of interests.

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