Primary Hypothyroidism with Pericardial Tamponade

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ABSTRACT

We report a rare case of pericardial effusion and tamponade in a 10-yr-old child with undiagnosed primary hypothyroidism, who presented to us with delayed milestones, anasarca for 7 mth and respiratory distress for 20 days. The child recovered with ultrasound guided pericardial tap and thyroxine replacement therapy. [Indian J Pediatr 2007; 74 (6) : 580-581]

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Hypothyroidism is commonly associated with pericardial effusion, but cardiac tamponade due to pericardial effusion is rare. We report a case of hypothyroidism and cardiac tamponade due to pericardial effusion in a child aged 10 yr.

CASE REPORT

We report a 10-yr-old child with puffiness of face and swelling of feet for 7 mth. He was treated with oral lasix for his complaints without much relief. He developed generalized anasarca and respiratory distress for 20 days before presenting to us. There was no history of fever, decreased urine output, cyanosis, skin rash or contact with Koch’s patient. He was born out of full term normal vaginal delivery, was immunized for age and had infrequent stooling pattern since birth. He had global developmental delay; developmental quotient being 20%.

On examination his temperature was normal, pulse rate 100 /minute, peripheral pulses were feeble and extremities were cold. He was tachypneic with respiratory rate of 38/min, BP= 90/60mmHg, pulsus paradoxus was present and jugular venous pressure was raised. He had coarse facies, depressed nasal bridge and hypertelorism. He had no clinical features suggestive of Down’s syndrome. His eyes were puffed up, more so the eyelids. There was no pallor, cyanosis or lymphadenopathy. He had umbilical hernia. The skin was dry and coarse all over. There was pitting edema and dry coarse skin on both lower limbs. His head circumference was 45cm, weight 16 Kg and height 100 cm.

The cardiovascular examination revealed a silent precordium; cardiac apex impulse was not visible, the 2nd left intercostal space was dull on percussion, the left cardiac border was extending up to mid-axillary line and the right border was 2 cms to the right of sternal border. On auscultation, heart sounds were distant, muffled and there was no murmur. There were a few crepitations at both the lung bases. The liver was palpable 5 cm below the costal margin, firm and non-tender, with a smooth surface and a sharp border. The spleen was not palpable. His deep reflexes showed delayed relaxation.

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Fig. 1. Chest X-ray of the patient showing huge cardiomegaly.
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Fig. 2. Echocardiography showing striking diastolic collapse of the free right ventricular wall suggestive of tamponade.

The Chest X-ray (Fig. 1) showed huge cardiomegaly (cardiothoracic index 0.80) and normal lung fields. The electrocardiogram showed low voltage complexes without any arrhythmias. Echocardiography showed intrinsically normal heart (no dilatation or hypertrophy), decreased left ventricular ejection fraction and a striking diastolic collapse of the free right ventricular wall suggestive of tamponade (Fig. 2). There was a large pericardial effusion surrounding the heart on all sides. Within the effusion, a swinging motion of heart was observed. Doppler (sample volume) in the hepatic vein showed a significant reduction in the diastolic forward flow and an increase in diastolic reversal after expiration. There was a small right sided pleural effusion. Routine hematological, urine, renal chemistry, liver function tests and blood glucose were normal. Mantoux test was negative.

An ultrasonography guided pericardial tap was done and 200 cc of serous fluid aspirated. The fluid showed 18 neutrophils, 3 lymphocytes and 10 RBCs, sugar was 75 mg%, protein 3.2 gm%, cholesterol 170 mg%; no organisms (including AFB) were grown on culture. The patient’s symptoms were relieved after the pericardial tapping. His T3 was 48 ng% (86-187), T4 was 1.8 ugm/dl (4-12) and TSH = 22mIU/ml (0.3-5).

He was started on thyroid hormone replacement therapy at 5ugm/Kg/day. After 3 mth of therapy, repeat T4 was 12ugm/dl and TSH was 0.46mIU/ml. Echocardiography showed a normal with very minimal pericardial effusion. He is on regular follow up with us and is showing improvement as regards his signs, symptoms and milestones.

DISCUSSION

Pericardial effusion and cardiac tamponade are rarely described in hypothyroid children. Most of the case reports are in adults. Those described in pediatric age group are in those with Down’s syndrome.

Myxedema heart disease as a distinct entity was first described by Zondek1 in 1918 and defined completely by Farh2 in 1925. The pathophysiologic derangements responsible for the collection of fluid in pericardium and other serous cavities of patients with hypothyroidism are probably increased plasma albumin egress from blood, decreased lymphatic clearance of interstitial fluid proteins and disturbances in electrolyte metabolism. The rarity of cardiac tamponade in myxedema patients with pericardial effusion3-7 is attributed to slow accumulation of fluid and marked distensibility of the pericardium. The prevalence and size of pericardial effusion have been correlated with the severity of hypothyroidism, they typically resolve 2-12 mth of T4 therapy.

The pericardial fluid is straw coloured. It has high content of alpha and beta globulins, WBCs (mainly polymorphs) and RBCs, the latter from the fragile capillaries. Alexander8 first used the term “Gold paint effusion” to describe the golden brown appearance of the pericardial fluid due to the shimmering satin cholesterol crystals. The high cholesterol content of the fluid has been attributed to the disturbances in lipid metabolism; possibly a churning action of the heart plays a role in the precipitation of cholesterol from pericardial fluid or the poor absorptive capacity of the pericardium may be a major factor. Cardiovascular manifestations of congenital hypothyroidism are similar to acquired hypothyroidism except for the rarity of pericardial effusion

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REFERENCES