Rachitic hypocalcemic cardiomyopathy in an infant

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Cardiomyopathy in infants is characterized by heart failure in apparently normal children without previous organic cardiac lesions. Cardiomyopathy has been found to comprise four types. Rickets is common in Saudi Arabia, that is why I reviewed this subject. Recently this case with classical features of rickets being admitted in a serious state we thought of publishing it. The infant responded well to treatment and full recovery was achieved. Follow up biochemistry, radiology cardiac function completely recovered and bony abnormalities showed evidence of healing. This case might have been missed as respiratory infection. We recommend meticulous look for biochemical features of rickets in infants admitted with respiratory symptoms.

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Keywords: Cardiomyopathy, Rickets, Hypocalcemia

Introduction

Although rickets is becoming a serious epidemiological problem, even in sunny countries, it is still considered a benign disease. However, it has some serious life-threatening associations (one of which is described herein) with cardiomyopathy which may be fatal had it been missed. Cardiomyopathy in infants is a rare complication of hypocalcemia. Although rickets is common in the Middle East, this complication was only reported recently [1]. We came across this case after reviewing the association of cardiomyopathy and hypocalcemia, as we thought it needed acknowledgment as a life-threatening situation in association with rickets [2]. To highlight this association and its significance in relation to hypocalcemia, we are reporting this case which was seen in Medinah Maternity and Children's Hospital in Medinah, Saudi Arabia.

Case report

A 6-month-old girl with dark skin was taken to the Accident and Emergency Department (A&E)

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of Medinah Maternity and Children's Hospital because she had collapsed suddenly and had convulsions. Before this episode she was said to be complaining of coughing and had difficulty in breathing, ongoing for 3 days and associated with poor feeding. She recovered after being resuscitated in A&E and was admitted to the Pediatric Intensive Care Unit, where she was ventilated. She had more attacks of convulsions which were controlled with anticonvulsive medications. Clinical exam revealed a well-built infant. The anterior fontanel was wide open and had evidence of a rachitic rosary in the chest with wide wrists (Figs. 1 and 2).

No murmur was heard on cardiac examination; however, there was tachycardia and the liver was 4 cm below the costal margin but the spleen was not palpable.

The patient was delivered at full term at another hospital by *cesarean section* due to oligohydramnios with failure of advance in labor. The child was admitted to the Neonatal Intensive Care Unit for 4 days due to respiratory distress which recovered and continued being breastfed without remarkable problems.

All necessary investigations were performed. The biochemical findings on admission were: alkaline phosphatase was 992 IU/L, calcium was 1.18 mg/dL, phosphate was 1.51 mg/dL, urea was 4.36 mg/dL, chloride was 100 mEq/L, creatinine was 28.5 mg/dL, Na was 136.5 mEq/L, K was 5.2 meEq/L, uric acid 3.6 mg/dL, hemoglobin was 10.2 g/dL, white blood cells were 10.8 mm^3, and platelets were 661,000 mm^3. Cardiac echocardiography revealed a dilated left atrium and ventricle with a fractional shortening of 22.5%, with impaired systolic function. There was also a mild degree of mitral regurgitation due to a dilated annulus. Electrocardiography showed sinus tachycardia.

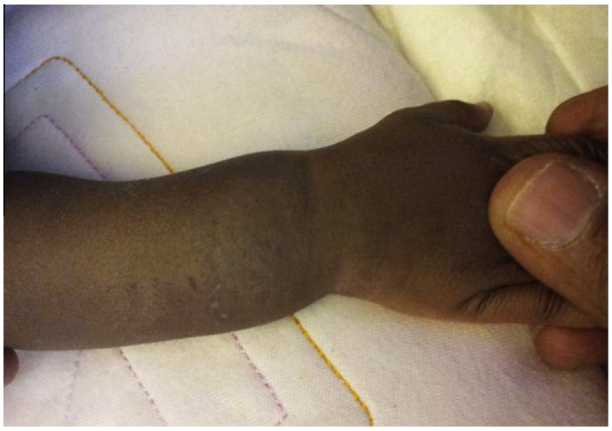

Figure 1. Wrist distally wide indicating rickets.

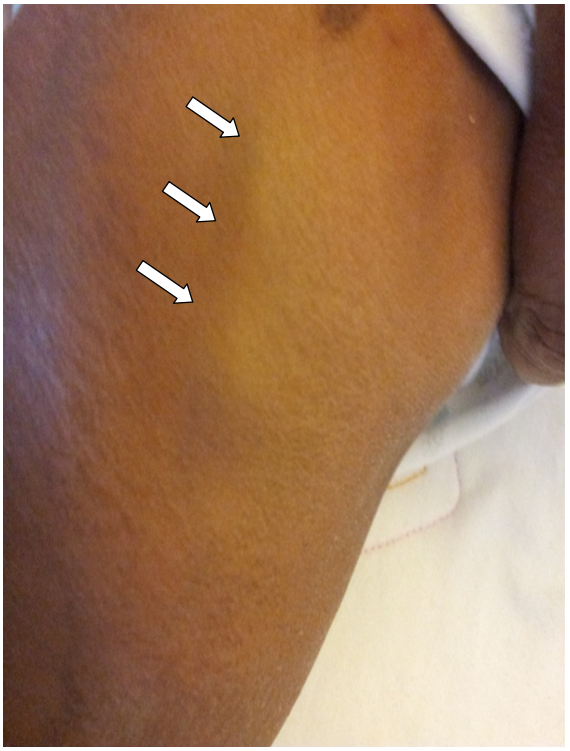

Figure 2. Rachitic rosary due to widening of the ends of the ribs.

She was treated with digoxin, captopril, phenobarbitone, vitamin D, calcium iv, iron, and magnesium. She was kept in the Pediatric Intensive Care Unit for 15 days with steady progress leading to clinical and biochemical recovery. At the final follow-up, echocardiography revealed that the left ventricular systolic function returned to normal with a fractional shortening of 32%. The left ventricular size was normal and no more mitral regurgitation was noted. The biochemical findings on discharge were: alkaline phosphatase was 698 IU, calcium 2.4 mg/dL, phosphate 1.08 mg/dL, urea 4.19 mg/dL, chloride 100.2 mEq/L, creatinine 27.9 mg/dL, Na 135.9 mEq/L, K 4.9 meEq/L, and uric acid 153 mg/dL (Table 1).

Discussion

This breastfed infant presented with respiratory distress at 6 months of age showing evidence of dilated cardiomyopathy with hypocalcemia on admission. The biochemical findings were characteristic of rickets with no obvious clinical bony changes, but appreciated when looked for. These included swollen wrists, rachitic rosary as shown in Figs. 1 and 2, and bossing of the head. These findings were suggestive of rickets together with dilated cardiomyopathy associated with hypocalcemia, without having obvious clinical bony

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