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TITLE: Infantile Pompe's Disease and Enzyme Replacement Therapy

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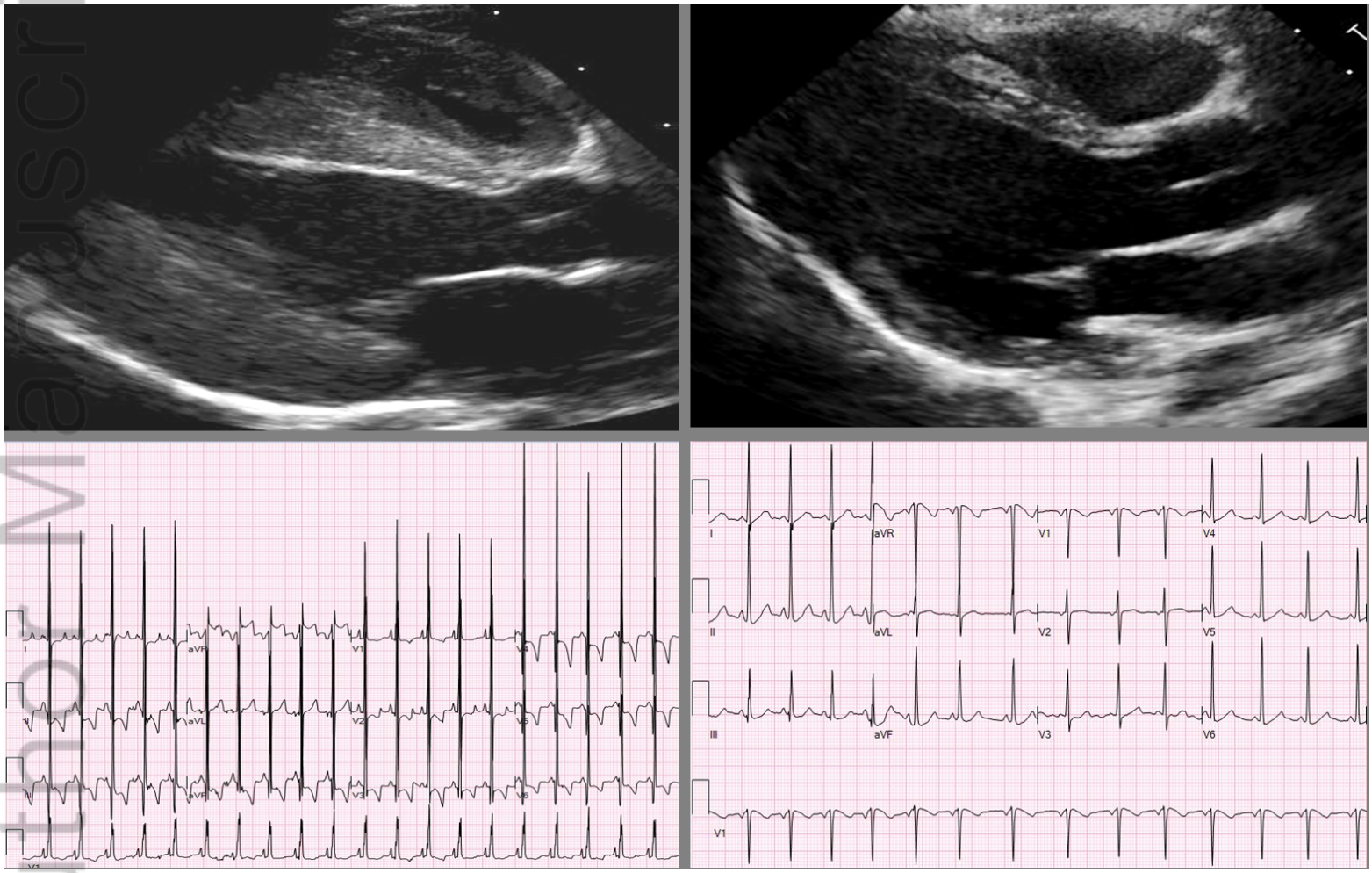

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We describe an interesting case of infantile Pompe's disease and the effect of enzyme replacement therapy. A one-week-old female, born at term, was brought to the emergency room with marked respiratory distress. A chest x ray obtained in the emergency room revealed severe cardiomegaly. An electrocardiogram was done which showed short PR interval and biventricular hypertrophy with strain pattern. Subsequent echocardiogram revealed severe left ventricular hypertrophy and moderately depressed left ventricular function. Acid alpha glucosidase (GAA) activity on dried blood spot was found to be reduced and urine HEX4 (hexose tetrasaccharide) level was found to be markedly elevated suggestive of Pompe disease. Molecular analysis of the GAA gene by sequencing revealed two mutations (c.1210G>A and c.2227C>T), thus confirming the diagnosis of Pompe disease. A skin biopsy was performed to determine CRIM (cross reacting immunologic material) status in order to assess her ability to respond to enzyme replacement therapy. She was CRIM positive. Subsequently she underwent recombinant human acid ±-glucosidase replacement at biweekly intervals. After 2.5 years of treatment there is near complete resolution of the abnormalities seen on her initial electrocardiogram and echocardiogram along with normalization of left ventricular function. **(Figure 1)** Pompe disease (GSD II) is an autosomal recessive disorder caused by deficiency of the lysosomal enzyme acid-±-glucosidase, leading to generalized accumulation of lysosomal glycogen in the heart, skeletal and smooth muscle, and the nervous system. This disease was first identified in the 1930s by Dr.Pompe. [1] Infants with infantile (classic) Pompe disease typically present during the first few months of life with hypotonia, macroglossia, feeding difficulties, respiratory distress and cardiomegaly.

Lysosomal glycogen deposition in heart results in hypertrophic cardiomyopathy and conduction abnormalities. If untreated, it results in death mostly from cardiorespiratory failure by one year of life. [2,3] Enzyme replacement therapy by recombinant human acid ±-glucosidase decreases left ventricular mass, improves skeletal muscle function and prolongs overall survival. [4] It also improves left ventricular voltages, QT dispersion and PR intervals on ECG. [5] Our case is a visual illustration of near complete resolution of electrocardiographic (short PR interval, biventricular hypertrophy) and echocardiographic (severe left ventricular hypertrophy, depressed left ventricular function) abnormalities in a case of infantile Pompe's disease with the use of biweekly recombinant human acid ± -glucosidase replacement.

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