COMPLETE AURICULO-VENTRICULAR HEART BLOCK IN THE FOETUS AND NEWBORN

BY

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It has been known for many years that abnormalities are sometimes detectable in the foetal pulse, and that their recognition before or during labour has led to an erroneous diagnosis of foetal distress. The use of the electrocardiograph and the phonocardiograph has shown that several kinds of abnormality may occur, and that there is much difference between them in prognosis.

Case Reports

Case 1. R.T. was born on July 29, 1947, of healthy parents. On July 18, 1947, antenatal examination showed that the foetal heart was slow and irregular. A murmur was audible and it was thought to be a 'funic souffle.' The irregular pulse was interpreted as evidence of foetal distress, and on July 26, 1947, the membranes were punctured to induce labour.

The child was born three days later after a normal labour. The foetal pulse remained at 80 throughout labour. At birth the baby appeared to be normal; there was no cyanosis and feeds were taken well, but examination of the heart showed a rate constantly below 60. The beat was regular. No murmur was audible in the praecordium, but the first heart sound to the left of the sternum was blurred and indistinct, in comparison with the clear-cut second sound.

The child was sent home, but was brought in again on Dec. 18, 1947. Up to this time his progress and gain in weight had been satisfactory. The slow pulse rate persisted. An electrocardiogram at this time showed a complete auriculo-ventricular block.

The child was next seen when six months old in January, 1948, when he was admitted to hospital

because of a severe attack of bronchitis. His history in the meantime was that he had gained weight satisfactorily until he was three months old and 12 lb. in weight, at which time the breast milk failed and he was put on artificial feeding. From this time onwards he was difficult to feed, and only weighed 11 lb. 4 oz. on admission. Other evidences of nutritional failure were his small size (height 23½ in., head 16¼ in., fontanelle 1 finger's breadth)

FIG. 1—Electrocardiogram showing complete heart block (Case 1.)

and a deformity of the thorax, consisting of an indrawing of the lower costal margin on both sides.

There was now a loud, rasping, systolic murmur, maximal in the third left space, close to the sternum and propagated outwards and upwards. This murmur replaced the first sound. X-ray examination showed the heart to be much enlarged. There was no clinical evidence of any pulmonary lesion more serious than bronchitis. The heart rate

remained steady, and the cyanosis which was present was attributed to the cardiac condition rather than to the bronchitis.

The only untoward incident during the course of the illness was an attack of vomiting followed by cyanosis and collapse lasting half an hour.

The child developed chickenpox while in the ward and his pulse rate rose to 120 for eleven days and then suddenly fell to 60.

His recovery from the bronchitis was good and it was felt that the infectious process had embarrassed the heart less than might have been expected.

FIG. 2.—Electrocardiogram showing complete heart block (Case 2.)

While in the ward he frequently refused his feeds, a common occurrence in congenital heart disease.

Case 2. R.P. was first seen on Aug. 19, 1946, when three weeks old. His birthweight had been 6 lb. 10 oz. He was a first child and was brought to hospital because his mother noticed that he was blue immediately after birth. The blueness continued to appear on crying.

On examination, inspection showed no obvious abnormality, and the infant was not cyanosed when first seen. There was, however, a loud systolic bruit all over the praecordium. The site of maximal intensity was difficult to define. The pulse was irregularly irregular and the rate was 96. An electrocardiogram showed a complete auriculo-ventricular block.

Later enquiries revealed that the child had died when eleven weeks old, and that no necropsy had been performed. No details as to the mode of death were obtainable.

Discussion

An electrocardiogram showed the presence of a complete auriculo-ventricular block in the neonatal period in both these cases. Signs were present before birth in the first case, although they were not correctly interpreted.

Communications on the subject may be considered under three headings: (1) Congenital heart block; (2) antenatal diagnosis of congenital heart block; and (3) antenatal studies with electrocardiograms and phonocardiograms.

Congenital heart block. Yater (1929) has studied this subject extensively, and he reviews the literature up to 1929, and with Lyon and McNabb in a later paper (1933), up to 1933. He gives certain criteria to be used in the diagnosis, namely bradycardia early in life, a graphic record, and the absence of rheumatic fever or syphilis. Additional evidence is provided by syncope early in life, and by associated congenital heart disease. He found one case in which the irregularity was noted before birth.

Antenatal diagnosis of auricular-ventricular block.

This has been made on several occasions. Sankey (1948) reviews the literature up to 1948 and gives a table of eight cases. Ottow (1939) and Heubner (1939) both insist that such a diagnosis can only be presumptive and that no prognosis can be given until some months after birth. This is borne out

by Heubner's case in which the change from auriculo-ventricular block to normal rhythm occurred gradually after birth. It is of interest in this connexion to notice Sheridan and Parker's (1947) case, in which a child who had no heart block at birth, developed one during the neonatal period (Witt, 1934; Geiger and Hines, 1940; Thompson, 1943; Sjöquist, 1942; Hammond et al., 1944).

Phonographic and electrocardiogram studies. These have shown that many different disorders of the foetal pulse rate and rhythm may occur. Hyman (1930) by this method found that 9.2 per cent. of foetal hearts showed an irregularity, but Sampson (1925) found only one in thirty-three cases. Various authors have described irregularities detected by these and other methods. Sino-auricular block, paroxysmal tachycardia, flutter, and extrasystoles have all been observed (Kriszt, 1937; Frisell, 1947; Roberts, 1938; Dippel, 1934; Weinzierl, 1927).

Prognosis. The presence of complete auriculo-ventricular block combined with other evidence of congenital heart disease has been associated with short duration of life in the cases so far reported. This makes its accurate diagnosis a matter of importance. There is general agreement that the importance of all congenital anomalies of the heart beat lies in their prognostic significance, and this is very difficult to assess. It is advisable not to give a final opinion until the child is several months old and an electrocardiogram is available.

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