CYANOSIS WITH DEFICIENCY OF THE INTER-VENTRICULAR SEPTUM.*

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THE subject of the present remarks, J. Thompson, aged 9, the son of healthy parents, was apparently in perfect health until seven years old. He had never suffered from rheumatism in any form, nor was there any history of shock or violent exertion. About two years since, he complained, for the first time, of dyspnoea, pain across the chest, and dizziness. He then had the first of a series of epileptic fits, and from that time gradually became cyanotic.

When admitted into the Children's Hospital, on February 6, 1872, his face and extremities were very blue; the lips deep purple. The conjunctival membrane was congested. On examining his chest, the apex-beat was found in its normal position, with a heaving rather than accentuated impulse. There was a loud systolic murmur, harsh and rough in character, most distinct at the midsternum opposite the cartilage of the fourth rib, barely audible at the ensiform cartilage, and not running up the sternum; not heard over the aortic valves in the second right intercostal space, only as a soft murmur over the pulmonary valves in the second left intercostal space. Posteriorly it was heard slightly opposite the upper angle of the scapula, but not at the lower angle, *i.e.*, the mitral district. This *bruit* was barely perceptible at the apex of the heart, but was limited to a space on the sternum opposite the fourth left rib cartilage. There was no regurgitation into the veins. The *bruit* was most distinct in the horizontal position, and frequently disappeared when he was raised upright; and when this occurred the boy complained of faintness and intense præcordial pain, and then was convulsed. The lungs were well and fully distended. There was no increase in the number of the respiratory movements, no cough or expectoration, and he never spat blood. The liver was not enlarged. The kidneys acted well; no albumen was detected in the urine. The first fit that was noticed in the hospital was on February 24, about eighteen days after admission, and they recurred at uncertain intervals until a week before his death; during the last week, they were much more frequent, with painful intermissions and deep cyanosis. About ten days before death, symptoms of pulmonary congestion came on with cough and frothy expectoration, but no blood. He died on June 10th, after a series of fits, in the intervals of which his mind was clear, but with pain and faintness. In forming my diagnosis, the intense venous congestion and blueness of skin clearly showed that, from some cause, the blood was not being fully oxygenised. The quiet respiration, the freedom of the lung from all symptoms of congestion, at a time when the whole system was gorged with venous blood, indicated, quite independently of the site and character of the *bruit*, that the mischief was not caused by any imperfection in the mitral or aortic valves. On the other hand, this state of the lungs might co-exist with partial plugging of the pulmonary artery; a solution which was rendered highly probable by the history of the case, a certain definite time having been noted at which the cyanosis and other symptoms came on. Yet this view was rendered improbable by the absence of any signs of dilatation of the right auricle or regurgitation into the jugular veins. I could only account satisfactorily for all the symptoms by a reopening of the foramen ovale; but in that case I should have expected more hypertrophy of the left ventricle, with a more distinct apex beat than was found in the case. On *post mortem* examination, June 17, every organ was found deeply congested with dark fluid blood. In the right auricle the inferior and superior cavæ were normal in size and position. The foramen ovale was closed. The tricuspid orifice was perfect, and the valves healthy. In the right ventricle the pulmonary arterial orifice was so small that it hardly admitted an ordinary probe. Immediately above, and to the right side of this orifice, the aorta could be felt open to the ventricle. The septum ventriculorum being deficient at the upper part for about half an inch, the finger could be pushed with ease into the aorta, from either the right or the left ventricle. The aorta seemed to be placed over both ventricles, so as to receive the blood from both as from a common cavity. The ductus arteriosus was patent, in its normal position, and of the diameter of an ordinary goosequill; in length about one-eighth of an inch.

There can be no doubt that this state of the heart was congenital. Numerous cases are on record in which the heart, in its development, has not kept pace with the rest of the body, so that in a full-grown child the heart of a fœtus in the fifth or eighth week of existence is

found; corresponding to the lower type of heart found in the Saurian reptiles, in all of which, except the American alligator, the normal heart consists of two auricles, and one ventricle partially divided by a septum, which separates the aorta from the pulmonary. This form of septum has been met with in many cases of congenital malformation, but in this one we find the septum deficient in the upper portion. Attention was first drawn to this class of cases by Sandifort, about the middle of last century; since that time Tiedemann, Quain, Farr, and others have contributed largely to the pathology of these cases. I shall not, however, detain you now with quotations from these authors, but simply draw your attention to a few points of interest in this case.

1. Life was prolonged until the ninth year; most of the cases of this form of cardiac mischief survive but a few days or months at most.
2. Cyanosis did not come on until early in the seventh year. Graily Hewitt records the case of a child which lived to the fifth month, and in which the skin was of normal whiteness unless moved or excited, when it became cyanotic immediately. In his case the pulmonary was obliterated and the septum deficient.
3. The small orifice of the pulmonary and the full size of the ductus arteriosus give support to the view proposed by Farr, that, in these cases, the lungs receive their blood from the aorta through the ductus, thus reversing the ordinary course; and here we should note that—
4. Dr. Peacock gives the case of a child twelve months old, in which there was a deficient septum and aorta common to both ventricles, but no ductus arteriosus or pulmonary artery, the lungs receiving their blood from the aorta by vessels corresponding to the branchial vessels of early foetal life.
5. One peculiarity in this case of Dr. Peacock's leads to the fifth point of interest; *viz.*, at times, in the upright position, the *bruit* (which was a loud systolic one like that in the present case) entirely disappeared, although loud and harsh when the boy was lying down, just as it did in the present instance.
6. In all or most of the cases the lungs were not fully distended, in fact atelectasis prevailed. In the case now before you the lungs were fully and well dilated; resonant on percussion, and the respiratory murmurs were perfectly normal until the last ten days of life; and this fact, so manifest at the same time that there was an absence of all symptoms of a dilated auricle or overloaded right side of the heart, caused me to diagnose the probability of reopening of the foramen ovale. I cannot close the paper without drawing attention to the clearness of the mental powers at a time when he was subject to epileptic fits on alteration of position. The retained carbonic acid cannot be fairly considered as the factor causing the fits.

RETROFLEXION OF THE IRIS.*

By A. SAMELSON, M.D., Manchester.

JOHN COATES, of Todmorden, aged 30, a "twister and drawer" in a cotton-mill, was admitted a patient at the Manchester Royal Eye Hospital on the 2nd of August.

[Having never known his parents, he was brought up in the work-house, and seems to have lost the sight of his left eye in infancy, as he never recollects seeing with it. This eye, at present, has no perception of light, and appears singularly flattened on both sides, at the distance of a few lines from the corneal margin; there is ciliary staphyloma, particularly developed above the limbus corneæ, tremulous iris, and a totally adherent narrow pupil, occupied by a siliqueous cataract. Having been hurt by the wheel of a cart which he was driving, he has had his right leg amputated a number of years ago, and is wearing a wooden leg.]

On the 24th of July last, he met with an accident to his *right* eye in the following way. He had been seated on the floor, to have his dinner, in the mill where he was working, when, in getting up, he slipped and fell with his head against a piece of iron which projected from the wall at the height of about two feet from the floor. The eye, after the accident had just occurred, is said to have been painful and bloodshot, but there was no bleeding. For two nights he could not sleep from pain, and could not keep his eyes open for two days; he cannot now "stand the sun" as well as he could before the accident. The eye was bathed with camomile tea, and a camomile-poultice was kept applied to it for the first two nights.

Status præsens.—The iris appears as a narrow seam only at its attached border, widest (about $1\frac{1}{2}$ lines) at the outer and lower periphery, narrowest at the top and inwards, in which latter situation it presents traces of a solution of continuity; two minute roundish knobs are seen to project, respectively upwards and outwards, from what

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