MITRAL STENOSIS AND LABOUR.

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Since bringing before the Society in October 1887 a communication on Mitral Stenosis and the Third Stage of Labour, I have met with three additional cases. In two of these I obtained post-mortem examinations, with results confirming my previous conclusions, and demonstrating effectively the main cause of sudden death at the end of labour.

The first patient was admitted to the Maternity in a dying condition. The history of her case, for which I am indebted to Dr Eden, one of the residents, is as follows:—

"Mrs J., age 34, was admitted to Royal Maternity Hospital on 5th January at 4 P.M., on the recommendation of Dr Simpson of Leith.

"When first seen after admission, patient was sitting propped up in bed, in the attitude of complete orthopnœa, and labouring painfully for breath. The lips were markedly cyanotic, the hands

cold, and the patient seemed restless and excited. The pulse at the wrist was rapid and feeble; respiration between 40 to 50 per minute; and so great was the dyspnœa that she could only with difficulty reply to questions put to her. She stated, however, that she was seven months pregnant with her first child, and had been married seven years. Three years ago she had rheumatic fever. Since the occurrence of pregnancy she has suffered from breathlessness, cough, swelling of feet, and increasing inability for all exertion. Latterly she had become rapidly worse.

"On examination of the heart a loud systolic murmur was heard at the aortic area, and a rough murmur was indistinctly heard in the mitral area. In the axilla the first sound was pure. The lungs presented loud crepitations everywhere, and some dulness was made out at the bases posteriorly. The abdomen showed a uterine tumour a little above the umbilicus. From the attitude of the patient the fœtal heart could not be heard.

"On vaginal examination the os was found to be undilated, and there had been no labour pains. The rectum was loaded, as also was the lower part of the colon; the bowels had not been moved for several days. The urine was very scanty, highly concentrated, and contained albumen. There was considerable œdema of feet and legs.

"An enema was given at once, and afterwards ʒss. of Henry's solution with 15 ♏ tinct. belladonnæ. Every hour, ether and strophanthus were given by the mouth.

"The patient grew quieter after an hour or two of rest, and through the following day continued in much the same condition. On the evening of 6th January she became worse, and the lungs appeared to be more choked. She was therefore dry cupped in six places over the back. This produced some relief. About midnight, however, the nurse in charge became alarmed and summoned the house physician, who found her *in articulo mortis*."

On post-mortem great œdema of the lungs with pleural and pericardial effusion was found, and the following was found to be the condition of the heart. For its examination I am indebted to the kindness of Dr Woodhead:—

"The *right auricle* was normal, and contained a large well-formed ante-mortem clot, which extended from the auricular appendage through the tricuspid valve and blocked the inferior vena-cava opening. Similarly the *right ventricle* was filled with a firm, decolorized clot, continuous with the one lying in the right auricle, as well as filling for a short distance the pulmonary artery. This clot had different degrees of consistency, and was exceptionally firm near the septum. There were only slight changes in the right ventricle, and these were confined to the muscular walls, the chamber being slightly dilated, and the muscular fibres only showing slight fatty changes.

"The *left auricle* was to a slight extent dilated and hypertrophied,

but the *left ventricle* was markedly hypertrophied, and in it, lying next the septum, was a considerable quantity of firm, decolorized clot, and small recent clots in the rest of the cavity. At the inner angle of the mitral valve were a few small recent vegetations, and one or two at the opposite angle. The outer angle of the mitral valve was much thickened, and at the point where the papillary muscle joins the chordæ tendineæ, and again where the chordæ tendineæ join the margin of the cusps, was marked thickening. The angles of the valves were quite adherent, and the auriculo-ventricular opening slightly stenosed. The cusps of the *aortic opening* were bound together at each margin with quite recent vegetations, which almost filled the lumen of the aortic opening, and gave it, on looking from above, an irregular, egg-shaped appearance. The sinuses were well defined, but the valves were thickened and calcareous. In the aorta were some small ante-mortem clots. The cavity measured 4¼ inches vertically; the thickness of the wall was ¾–¼ inch at the extreme apex.

"*Lungs.*—The lungs were congested and œdematous, the bronchial mucous membrane congested, and the glands at the root of the lungs congested and slightly pigmented. There was also a slight pleurisy.

"*Liver.*—The morbid changes in the liver were venous congestion, fatty infiltration and degeneration, with clots in the veins.

"*Kidneys.*—In the kidney were cicatrices from old infarcts. The capsule was slightly adherent; the cortex was thin and irregular; the epithelium in the tubules was full and apparently fatty, and the Malpighian tufts large and the organ congested. The iodine reactions were negative." Microscopical examination of the mitral valve showed ulcerative endocarditis (simple) with no micro-organisms. In this case it is evident that the strain of pregnancy aggravated the heart condition, setting up fresh left-sided endocarditis, especially in the aortic segments. The aortic stenosis thus produced was of the most marked type, and as a result, we had an obstruction to the circulation causing failure of compensation, with pulmonary, pleural, and pericardial effusion. The result was exactly analogous to that of mitral stenosis, except that the resistance of the strong left ventricle had first to be overcome.

THE SECOND FATAL case has been already mentioned, regarding her second labour, in my previous paper, as "the worst case I ever had." During the puerperium of her second child she had free hæmoptysis, showing pulmonary congestion. In this, her third pregnancy, there was great œdema of the lower limbs and dyspnœa on exertion. The presystolic murmur was well marked and the heart's action irregular. Under the use of digitalis, which she had taken for several years intermittently and with great benefit, the œdema disappeared.

She fell in labour on the 2nd March, and I saw her at 9 A.M. The first stage was completed, and I delivered with forceps. In

the third stage there was a fair amount of hæmorrhage with adherent placenta, as in her last confinement. I removed the placenta manually, but immediately on the completion of the separation she turned her head slightly to the left side, became unconscious, breathed with great rapidity, and died before I had time to do anything further than give a stimulant hypodermically.

Dr Bruce performed the post-mortem. On the thorax being examined after opening the chest, it could be seen that the right auricle was greatly distended. The bloodvessels of the heart were then tied, and the heart removed so as to ascertain the condition of the cavities so far as blood distension was concerned. The right auricle, as already said, was over-distended. The heart was frozen in the vertical position, with the result that the auricular distension diminished markedly. It was therefore thawed and refrozen with its left-sided aspect lower. It was then divided by a vertical saw-cut so as to expose both sides of the heart. Blood-clot was found in the right auricle and ventricle. The left side of the heart was completely empty. The mitral valve was extremely stenosed, admitting merely the tip of the little finger.

From what I have said as to the condition of the heart, it is quite a fair account to say that—(1.) On the completion of the third stage the right auricle became over-distended and the heart paralyzed. (2.) The dyspnœa was due to absence of blood in the lung, and the unconsciousness to anæmia of the brain from emptiness of the left side of the heart. It is possible that the right side became partly engorged during the second stage.

In the THIRD CASE seen by me the patient had a marked presystolic murmur, and was pregnant for the second time. During the last six months of pregnancy she took tincture of strophanthus, 3 drops thrice daily, with no intermission. During all the time no symptoms referable to the heart appeared. She had an easy labour and recovered perfectly, except that on the second day of the puerperium there was facial paralysis, left-sided, for a few hours.

These cases seem to me to require little comment. The prognosis in such depends on two things, viz., the extent to which dilatation has advanced, and the endocarditis set up. When the failure in compensation has extended to the right side of the heart, weakening it, then the sudden strain from the excess of blood entering when the third stage is completed may prove fatal.

The extent of the dilatation of the right side may be judged of, during life, by percussion, the existence of venous pulsation and of hæmoptysis, and also, as Broadbent has more especially pointed out, by the nature of the murmur. When the first sound is not well heard, or has disappeared, this shows weakness of the left auricle; and when the murmur loses its intensity, this means, within certain limits, a weakening of the heart's action by dilatation of the left auricle and right side of the heart that bodes ill for labour.

Plate I. shows heart of fatal case of mitral stenosis cut, when frozen, so as to expose cavities.

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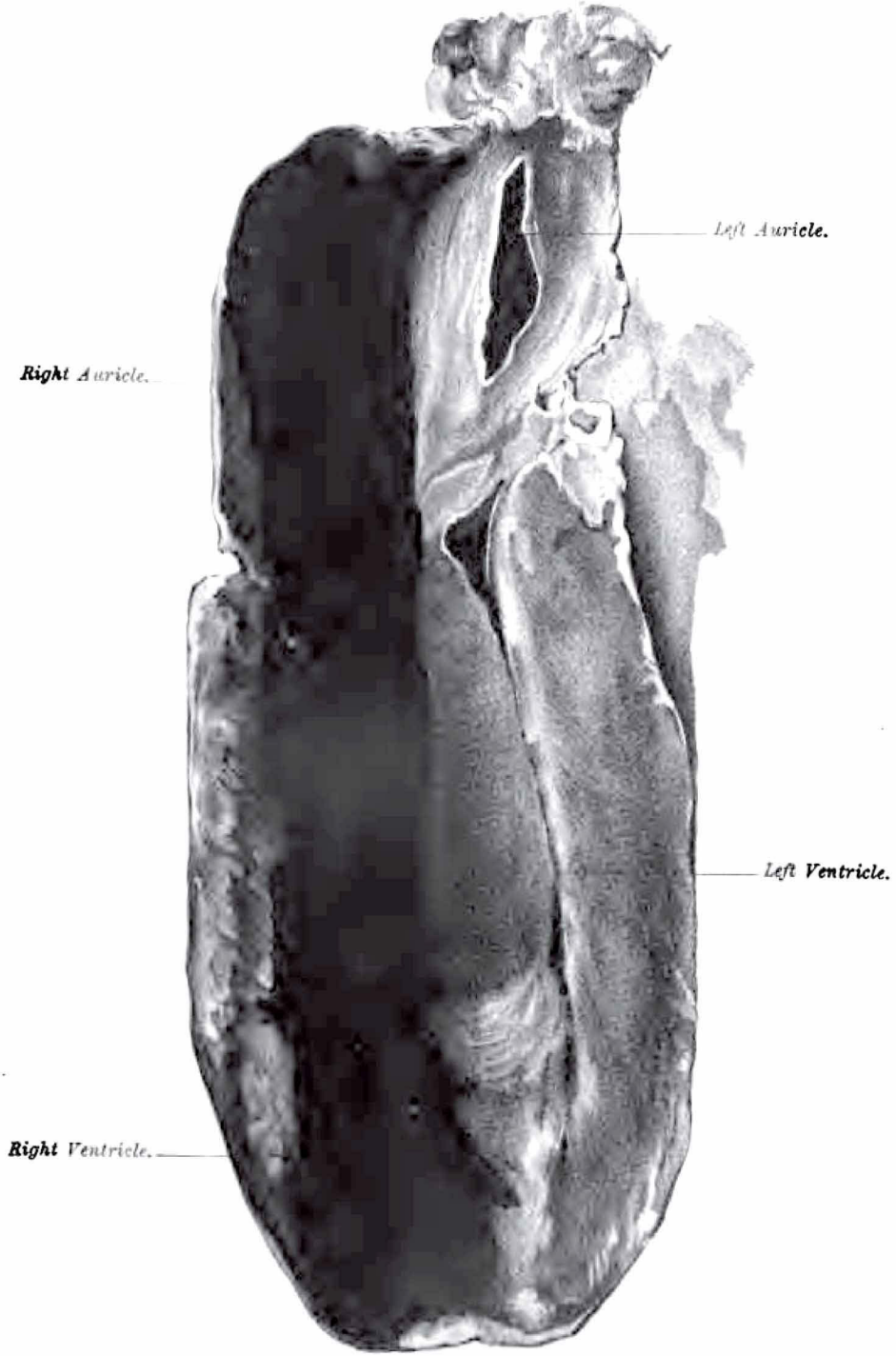
Professor Simpson thought the Society indebted to Dr Hart for the record of the cases which he had just read. It was important to get the results of the post-mortem examination in all the patients who died in pregnancy or the puerperium with various forms of heart disease, especially when, as in Dr Hart's first case, there had been observation made as to the physical condition during life. He (Professor Simpson) had seen that patient in the Maternity, where from the moment of entrance her case was hopeless from the morbid conditions of lungs and kidneys which complicated the heart affection, so that it was not one from which we could draw conclusions as to the influence of cardiac disease pure and simple.

Dr Haig Ferguson had had an opportunity of seeing one case bearing on Dr Hart's interesting paper. The patient was a primipara who suffered from double mitral, double aortic, and tricuspid murmurs, with extremely dilated right heart. She was admitted into the Hospital, and with treatment and rest she became much better as regards her symptoms, the dyspnœa being almost gone while she lay in bed. The patient was six months pregnant. Labour pains came on suddenly, and immediately all her symptoms became aggravated, and orthopnœa and cyanosis developed with great severity. As the pains set in more regularly the patient's condition became more and more serious. The os uteri just admitted the finger, and was fairly soft. The indication for speedy delivery was apparent. For this purpose a little chloroform was administered, and he proceeded to dilate the cervical canal with his fingers. This he accomplished in little more than half an hour. He then applied forceps, and delivered the fœtus as rapidly as possible. The placenta, unfortunately, was adherent, and required to be scraped away from the interior of the uterus. The uterus contracted well, and there was no hæmorrhage. After this the patient rallied a little, but her heart began to fail again, and she died from cardiac failure about three hours after delivery was effected. He regretted much that more hæmorrhage did not occur from the uterus, as it would have relieved the over-distended right side of the heart, and possibly would have allowed the circulation to have become re-established. If he should ever again meet with a similar case he should feel inclined to perform venesection, for the purpose



SECTION OF HEART WITH MITRAL STENOSIS IN CASE OF SUDDEN DEATH AT END OF LABOUR.

of relieving the strain on the right side of the heart. Unfortunately, there was no post-mortem examination, so that the actual condition of the heart could not be ascertained.

The President was much interested in Dr Hart's cases; they brought to his mind the great papers on heart disease in connexion with labour which were read before the Society by the late Dr Angus Macdonald. He thought that, had the first case been in a position to have received careful treatment during the earlier part of her pregnancy, the result might have been different. He did not quite follow Dr Hart's explanation of the sequence of events in the third case, nor did he quite understand how the left heart came to be empty and the right heart over-distended, as the post-mortem showed was the case. He had recently had under his care a woman with a bad mitral stenosis. During her pregnancy she had frequent attacks of dyspnœa, and was seldom able to sleep unless propped up in bed. By continued use of strophanthus throughout the pregnancy she arrived at the full time without mishap and in fair condition. The labour was tedious in its earlier stage, but as soon as the os was dilated chloroform was given and the forceps applied, and after a period of considerable dyspnœa and consequent anxiety, she rallied and made an excellent recovery.

Dr Berry Hart thanked the Fellows for their reception of his paper. In the aortic stenosis case the heart disease was primary and the pleural and pericardial effusions secondary to it. The renal affection with its old infarcts was also in all probability secondary. Dr Underhill's question was a necessary one. The right-sided dilatation was secondary; of course left-sided primary affections were the usual ones.