dolens. Thus it existed in one of MacDonald's two cases, and in two out of my own three. Like phlegmasia dolens, moreover, the disease generally commenced some weeks after delivery; my own cases, for example, occurred respectively fifteen, twenty-eight, and thirty-five days after labor. It is difficult to believe that there is not some connection between these two conditions, and there is much in their peculiar history to lead to the belief that such forms of lung disease depend, in fact, on the thrombotic or embolic obstruction of the minute branches of the pulmonary arteries, caused by conditions similar to those which have produced the phlebitic obstructions in the lower extremities. In the absence of careful post-mortem examination this hypothesis is clearly not susceptible of proof. MacDonald, while admitting that "a limited thrombosis of the pulmonary arteries would no doubt explain the facts of the cases," is rather inclined to "seek the chief explanation of their occurrence in the alterations which the pregnant and puerperal conditions impress upon the blood and the blood-vascular system."

I confess that to my mind the former hypothesis is not only the most definite, but the one which most readily explains all the peculiarities of these cases. I cannot, however, do more than suggest it, in the hope that further observations, and especially carefully conducted autopsies, may throw some light on this obscure and little-studied subject.

Treatment.—As regards treatment, it is obvious that it must be conducted on general principles, carefully avoiding over-severe measures, and supporting the patient through a trial to the system that must necessarily be severe.

CHAPTER VII.

PUERPERAL ARTERIAL THROMBOSIS AND EMBOLISM.

Arterial Thrombosis and Embolism.—The same condition of the blood which so strongly predisposes to coagulation in the vessels through which venous blood circulates tends to similar results in the arterial system. These, however, are by no means so common, and do not, as a rule, lead to such important consequences. The subject has been but little studied, and almost all our knowledge of it is derived from a very interesting essay by Sir James Simpson.[1] As I have devoted so much space to the consideration of venous thrombosis and embolism, I shall but briefly consider the effects of arterial obstruction.

Causes.—In a considerable number of recorded cases the obstruction has resulted from the detachment of vegetations deposited on the cardiac valves, the result of endocarditis, either produced by antecedent rheumatism or as a complication of the puerperal state. Sometimes the obstruction seems to depend on some general blood dyscrasia, similar to that producing venous thrombosis, or on some local change in the artery itself. Thus Simpson records a case apparently produced by local arteritis, which caused acute gangrene of both lower extremities, ending fatally in the third week after delivery. In other cases it has been attributed to coagulation following spontaneous laceration and corrugation of the internal coat of the artery.

Symptoms.—The symptoms of puerperal arterial obstruction must, of course, vary with the particular arteries affected. Those with the obstruction of which we are most familiar are the cerebral, the brachial, and the femoral. The effects produced must also be modified by the size of the embolus, and the more or less complete obstruction it produces. Thus, for example, if the middle cerebral artery be blocked up entirely, the functions of those portions of the brain supplied by it will be more or less completely arrested, and hemiplegia of the opposite side of the body, followed by softening of the brain texture, will probably result. If the nervous symptoms be developed gradually, or increase in intensity after their first appearance, it may be that an obstruction, at first incomplete, has increased by the deposition of fibrin around it. So the occasional sudden supervention of blindness, with destruction of the eyeball—cases of which are recorded by Simpson—not improbably depend on the occlusion of the ophthalmic artery, the function of the organ depending on its supply through the single artery. The effects of obstruction of the visceral arteries in the puerperal state are entirely unknown, but it is far from unlikely that further investigation may prove them to be of great importance. In the extremities arterial obstruction produces effects which are well marked. They are classified by Simpson under the following heads: 1. *Arrest of pulse below the site of obstruction.* This has been observed to come on either suddenly or gradually, and, if the occlusion be in one of the large arterial trunks, it is a symptom which a careful examination will readily enable us to detect. 2. *Increased force of pulsation in the arteries above the seat of obstruction.* 3. *Fall in the temperature of the limb.* This is a symptom which is easily appreciable by the thermometer, and when the main artery of the limb is occluded the coldness of the extremity is well marked. 4. *Lesions of motor and sensory functions, paralysis, neuralgia, etc.* Loss of power in the affected limb is often a prominent symptom, and when it comes on suddenly, and is complete, the main artery will probably be occluded. It may be diagnosed from paralysis depending on cerebral or spinal causes by the absence of head symptoms, by the history of the attack, and by the presence of other indications of arterial obstruction, such as loss of pulsation in the artery, fall of temperature, etc. The sensory functions in these cases are generally also seriously disturbed, not so much by loss of sensation as by severe pain and neuralgia. Sometimes the pain has been excessive, and occasionally it has been the first symptom which directed attention to the state of the

[1] Selected Obstet. Works, vol. i. p. 523.

limb. 5. *Gangrene below or beyond the seat of arterial obstruction.* Several interesting cases are recorded in which gangrene has followed arterial obstruction. Generally speaking, gangrene will not follow occlusion of the main arterial trunk of an extremity, as the collateral circulation soon becomes sufficiently developed to maintain its vitality. In many of the cases either thrombi have obstructed the channels of collateral circulation as well, or the veins of the limb have also been blocked up. When such extensive obstructions occur, they obviously cannot be embolic, but must depend on a local thrombosis, traceable to some general blood dyscrasia depending on the puerperal state.

Treatment.—Little can be said as to the treatment of such cases, which must vary with the gravity and nature of the symptoms in each. Beyond absolute rest (in the hope of eventual absorption of the thrombus or embolus), generous diet, attention to the general health of the patient, and sedative applications to relieve the local pain, there is little in our power. Should gangrene of an extremity supervene in a puerperal patient, the case must necessarily be well-nigh hopeless. Simpson, however, records one instance in which amputation was performed above the line of demarcation, the patient eventually recovering.

CHAPTER VIII.

OTHER CAUSES OF SUDDEN DEATH DURING LABOR AND THE PUERPERAL STATE.

A LARGE number of the cases in which sudden death occurs during or after delivery find their explanation, as I have already pointed out, in thrombosis or embolism of the heart and pulmonary arteries. Probably many cases of the so-called *idiopathic asphyxia* were, in fact, examples of this accident, the true nature of which had been misunderstood. Besides these, there are, no doubt, many other conditions which may lead to a suddenly fatal result in connection with parturition.

Some of these are of an organic, others of a functional nature.

Organic Causes.—Among the former may be mentioned cases in which the straining efforts of the second stage of labor have produced death in patients suffering from some pre-existent disease of the heart. Rupture of that organ has probably occurred from fatty degeneration of its walls. Dehous[1] narrates an instance in which the efforts of labor caused the rupture of an aneurism. Another case, from interference with the action of the heart in a patient who had pericardial effusion, is narrated by Ramsbotham. Dr. Devilliers relates an

[1] Dehous: Sur les Morts subites.

instance occurring in a young woman during the second stage of labor. The heart was found to be healthy, but the lungs were intensely congested and blood was extensively extravasated all through their texture. This was probably caused by pulmonary congestion and apoplexy, produced by the severe straining efforts. Many cases from effusion of blood into the brain substance, or on its surface, are on record—no doubt in patients who, from arterial degeneration or other causes, were predisposed to apoplectic effusions. The so-called apoplectic convulsions, formerly described in most works on obstetrics as a variety of puerperal convulsions, are evidently nothing more than apoplexy coming on during or after labor. As regards their pathology, they do not seem to differ from ordinary cases of apoplexy in the non-pregnant condition. One example is recorded of death which was attributed to rupture of the diaphragm from excessive action in the second stage.

Functional Causes.—Among the causes of death which cannot be traced to some distinct organic lesion may be classed cases of syncope, shock, and exhaustion. Many instances of this kind are recorded. Thus in some women of susceptible nervous organization the severity of the suffering appears to bring on a condition similar to that produced by excessive shock or exhaustion, which has not unfrequently proved fatal. Several examples of this kind have been cited by McClintock.[1] It is also not unlikely that sudden syncope sometimes produces a fatal result during or after labor. Most cases of death otherwise inexplicable used to be referred to this cause; but accurate autopsies were seldom made, and even when they were—the important effects of pulmonary coagula being unknown—it is more than probable that the true cause of death was overlooked. It has been supposed that the sudden removal of pressure from the veins of the abdomen, by the emptying of the gravid uterus after delivery, may favor an increased afflux of blood into the lower parts of the body, and thus tend to an anæmic condition of the brain and the production of syncope. However this may be, the possibility of its occurrence, and its manifest danger in a recently delivered woman, are sufficient reasons for enforcing the recumbent position after labor is over. In some of the cases the syncope was evidently produced by the patient suddenly sitting upright.

Death from Air in the Veins.—Some cases of sudden death immediately after labor seem to be due to the entrance of air into the veins. Six examples are cited by McClintock which were probably due to this cause. La Chapelle related two. An interesting case is related by M. Lionet.[2] In this the patient died five and a half hours after an easy and natural labor, the chief symptoms being extreme pallor, efforts at vomiting, and dyspnœa. Air was found in the heart and in the arachnoid veins. There can be no question that the uterine sinuses after delivery are nearly as well adapted as the veins of the neck for allowing the entrance of air. They are firmly attached to the muscular walls of the uterus, so that they gape open when that

[1] Union Méd., 1853.
[2] Dehous: op. cit., p. 58.