ntravenously, tracings of the blood pressure and respirations again being taken. Fig. 5 shows the immediate cessation of respiration and the transient rise of blood pressure followed by the marked fall. Artificial respira-

Fig. 4.

tion (20 a minute) was used, and slowly the blood pressure rose again, only to slowly fall whenever artificial respiration was discontinued, as is well shown in Fig. 6. The animal was kept alive by artificial re-

Fig. 5.

spiration till in Fig. 7, one hour later, natural respiration had started—slow and shallow, but gradually increasing in rate and in depth till the animal was killed two hours after the initial injection.

Fig. 6.

Clinically one meets with those apparently alarming cases in which the respiration-rate is greatly reduced to 5 or 6 a minute, and Figs. 3 and 4 demonstrate this clinical point in animals. Fig. 5 shows clearly where the

Fig. 7.

danger of the scopolamine and morphine narcosis lies, and equally clearly, in Figs. 6 and 7, is shown the clinical importance of artificial respiration in cases of an overdose of scopolamine and morphine; and this artificial respiration, combined with drugs which stimulate the respiratory centre, such as strychnine, seems to offer the most logical method of treatment in cases of an overdose.

AT a meeting of the American Health League recently held at New York a resolution was passed urging that measures should be introduced in Congress providing for the establishment of a national bureau of public health.

A COMMITTEE has been formed, among the members of which we note such well-known names as Professors Bouchard, Dastre, Simon Duplay, Laveran, F. Raymond, and Drs. Lermoyez, Moure, and Depierris, General Secretary of the French Society of Oto-rhino-laryngology, and Veillard, General Secretary of the Society of the same name, for the purpose of celebrating the jubilee of M. Gellé père. A medal will be struck in his honour.

DEATH UNDER SPINAL ANAESTHESIA BY JONNESCO'S METHOD IN A CASE OF ACUTE INTESTINAL OBSTRUCTION.

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At a time when trial is being given in this country to Jonnesco's method of spinal anaesthesia, it would seem advisable that all fatalities should be reported. The following case has occurred in my practice at the General Hospital, Birmingham.

On the evening of January 24th, 1910, a man aged 50 was admitted suffering from intestinal obstruction. He was of moderate build, and had not complained of any symptoms of disease until eight days before admission. Since that time obstruction had been complete, and vomiting had set in and had been persistent. On admission he was found to be much distended, and vomiting of a faecal and regurgitant nature was occurring at intervals of a few minutes. His pulse was 108, and of fair strength. The type of vomiting suggested special dangers for a general anaesthetic, and having recently used Jonnesco's dorsi-lumbar method with marked success in an exactly similar case, I determined to use it again.

The patient was therefore brought into the theatre, and the usual preparations having been made, an injection of 10 cg. of stovaine and 1 mg. of strychnine in 1 c.cm. of water was made in the dorsi-lumbar region. On account of the patient's condition and abdominal distension, it was not possible to employ the sitting position and forward arching of the back to any advantage, and it was only after three attempts that the introduction of the needle was successfully accomplished.

The subsequent sequence of events was as follows:

January 25th, 1 a.m.—Spinal injection of stovaine and strychnine given in dorsi-lumbar region, the patient being on the right side, with the head raised on a thick pillow. After the injection the patient was immediately turned on his back, the pillow being left under the head.

1.6 a.m.—The patient, who had been moaning, began to look ill compared with his previous appearance.

1.7 a.m.—Pupils dilating, and commencing failure of the pulse. The patient now looked very ill, and vomited liquid faeculent matter. Inj. aetheris 3ss into thigh. Inj. strych. m10 subcut.

1.10 a.m.—The patient quite unconscious. Giving forth gasping respiration, and vomiting large quantities of the most offensive matter, exactly resembling faeces, without effort.

1.11 a.m.—Respirations very shallow, and dying away. On account of the vomiting, the head, which until now had been raised, was lowered, and artificial respiration was resorted to. The continual stream of vomit seemed, however, to render this proceeding useless. The fauces were repeatedly mopped out, and the tongue drawn forward. Two syringefuls of ether and more strychnine were injected, and hot and cold water alternately applied to the chest.

1.12 a.m.—The pulse was now imperceptible, and all natural efforts of respiration had ceased. The conjunctival reflex was still present, and the pupils were contracted. Inj. adrenalin m20 (1 in 1,000).

1.15.—The conjunctival reflex now lost, and the pupils in mid-way position and fixed. Vomit still continued to pour from the mouth, suggestive of the fact that the gastric sphincters were relaxed. Various means of resuscitation still continued, but the patient had apparently ceased to live.

The artificial respiration was continued for one hour after all signs of life had ceased, and no operative measure was undertaken for the relief of the obstruction.

Necropsy.

A post-mortem examination held at the General Hospital on January 26th, 1910, showed the following appearances.

Externally, the body was that of a well-developed man. There was a slight distension of the abdominal parietes, and in the dorsi-lumbar region a considerable swelling caused by a subcutaneous haematoma. This was to be accounted for by the needle puncture and by hypostatic congestion.

Internally, the heart muscle was firm. The left ventricle slightly hypertrophied and dilated; the right ventricle slightly dilated. There was fibrosis of the musculi papillares in the left ventricle, but none of the valves were thickened or in any way diseased.

Both lungs were congested and dark in colour, and in both lower lobes were small areas of commencing broncho-pneumonia. Oedema and emphysema of both lungs was also present.

The trachea contained some dark greenish mucoid material resembling the vomit, but not sufficient to have caused asphyxia.

Both visceral and parietal layers of the peritoneum were scattered all over with small grey nodules of malignant growth. They were thickest in the pelvic region, and at the mesenteric attachments of the gut. The sigmoid flexure was severely kinked by the attachment of a nodule of growth in the omentum to an epiploic appendix. A little free fluid was present.

The stomach contained foul dark brownish-green fluid, which had also stained the oesophagus.

The small intestine was distended throughout with the same material as in the stomach. At the ileo-caecal valve the lumen of the intestine was completely closed by a growth which had apparently originated in or near the submucous layer and had grown towards the lumen without ulcerating the lining membrane. This was the seat of obstruction, for beyond this point the gut was empty and collapsed. In all probability here was the primary growth.

The liver contained a few nodules of growth on the surface and in its substance.

The kidneys were slightly fibrosed.

The remaining abdominal viscera presented nothing of interest.

The spinal cord. The theca was found to have been punctured between the eleventh and twelfth dorsal vertebrae. There was a puncture in the membranes over the lumbar enlargement at this point, and the blood vessels were engorged over the surface of the cord. No haemorrhage was observed, either outside or inside the spinal theca, except that which had already been seen outside the bony canal in the muscles and subcutaneous tissues of the back.

The external appearance of the spinal cord and of the brain were perfectly normal, and no injury was observable in the cord itself. It did not appear to have been touched by the needle, and macroscopically its structure was normal.

There can be no doubt that this man's death was directly due to the toxic effects of an intraspinal injection of stovaine and strychnine. Shock caused by traumatism is negated by the absence of any definite injury to the cord or its membranes, but the sudden and fatal onset of cardiac and respiratory failure was exactly what might be expected of a reagent producing the same changes in the medullary region, as was purposed to be produced in the lower dorsal segments of the cord. Prior to the injection the patient was in the usual bad condition of a man with advanced intestinal obstruction, but except for his vomiting, I should not have hesitated to submit him to a general anaesthetic. As far as his heart and lungs were concerned, a general anaesthetic was by no means contraindicated, though his extreme distension undoubtedly made his chances of ultimate recovery very doubtful.

After the injection had been made, and when I was about to test the skin for anaesthesia, I noticed the unmistakable signs of profound collapse passing over his face, and the events which so speedily led to his death then ensued. Jonnesco advises that the patient be sat up with the spinal column bent forward to admit of the easy introduction of the needle.

This was not possible in the present case, and in view of his statement that a second injection can be given—necessarily in the recumbent position—to prolong the anaesthesia, I did not hesitate to give it in this position. As long as the head is raised there should, I think, be no more danger in so doing than in giving a cervico-dorsal injection.

My previous experience of the dorso-lumbar method in a case of acute obstruction was so satisfactory as to encourage me to think that the perfect anaesthetic in these difficult cases had been found. In this case the absolute analgesia of the whole abdomen, its complete relaxation, together with the entire absence of peristalsis and inclination of the distended bowels to press through the wound—in other words, the abdominal calm—were a new and most satisfactory experience of abdominal surgery. It seems strange that two such similar cases should end so differently—that in the one the higher centres should exhibit such profound toxæmia, while in the other they should be in no way affected.

In his paper on this subject, recently published in the JOURNAL (1909, vol. ii, p. 1396), Jonnesco has extolled the wonderful safety to be procured by combining strychnine with the anaesthetic reagent in the intraspinal method of anaesthesia. In this particular case I do not wish to acquit myself entirely of responsibility in the matter of dosage; for, although Jonnesco utters no grave warning against full doses, he does advise that the amount of 10 cg. shall be reduced in cases of severe illness. At the same time, such was the acuteness and rapidity of onset of the toxic symptoms that a much smaller dose (5 cg.) would, I believe, have been attended with great danger, even if nothing worse had happened. It may be that this patient exhibited an idiosyncrasy, but, in view of the serious results that have come to my notice in certain other cases, I shall hesitate in the future before injecting into the dorso-lumbar region, even of a healthy adult, a larger amount of stovaine than 5 cg.

HAEMOPNEUMOTHORAX WITHOUT TRAUMATISM: RECOVERY.

BY

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CASES of haemopneumothorax are sufficiently uncommon to be worthy of note; while excluding those due to injury, the condition is extremely rare. We have only been able to find records of two cases at all resembling the present one and both were fatal.

This patient was first seen on September 8th, 1909, in consultation with Dr. Hamilton Campbell (Partick), when signs of hydropneumothorax were present, and on performing paracentesis about 5 oz. of fluid, evidently blood mixed with serum, but no pus, were withdrawn. He was admitted the same day to the Western Infirmary.

History.

He was a clerk aged 31 years. On rising from his bed on the morning of August 27th, when on holiday, he experienced some pain and a sense of tightness in the left side of the chest and in the region of the stomach, and was rather breathless. He had lain without a nightshirt in a damp bed, and to that cause attributed his illness. In spite of his condition he was able to travel home, a distance of some ninety miles, and commenced work on August 30th. On September 3rd, when walking to his work, he had a similar but more severe attack of pain in the left chest and shoulder. He felt faint, but managed to get home by tram and went to bed, where he remained till removed to hospital.

Condition on Admission.

He had marked signs of hydropneumothorax. The left side of the chest was bulging and did not move with respiration. When lying flat on his back a tympanitic note was obtained on percussion over the whole left front of the thorax, and also on the right side to a line drawn from the suprasternal notch to a point $1\frac{1}{2}$ in. to the right of the mid-sternum at the level of the fourth cartilage. The respiratory murmur, vocal resonance, and fremitus were diminished over all this area. When the patient was sitting up there was an area of dullness below the level of the fourth rib on the left side, extending down to the costal margin. Behind, dullness reached to the level of the seventh dorsal spine, and this level rose as the patient reclined. Above this a tympanitic note was obtained, with absence of respiratory murmur and vocal fremitus and deficient vocal resonance. In addition to the tympanicity and movable dullness, splashing sounds on succussion and the coin sound were typically present, but there was no metallic tinkling. The only area of cardiac pulsation was on the right side in the fourth space, with its centre about 3 in. from the middle line. A small area of relative dullness was also made out in this region, extending from the upper border of the fourth rib to the fifth rib, and transversely from $1\frac{1}{2}$ to $3\frac{1}{2}$ in. to the right of the mid-sternum. The heart's sounds were well heard in this area, free from murmur; they were quite inaudible in the normal apical region, and only indistinctly heard toward the upper part of the sternum. The pulse was 108, regular, small, and weak. The liver was displaced downwards, relatively more on the left side, as were also the stomach and spleen. The temperature at first was of an irregularly remittent type, ranging from 98° to 101° F.

Course of the Disease.

Improvement was steady; by September 13th the area of cardiac dullness was more definite, and almost reached the middle line, while the liver had risen a little.

On October 2nd, cardiac pulsation was seen in the fifth left interspace $2\frac{1}{2}$ in. from the mid-sternum. The absolute liver dullness reached the sixth rib in the right mid-clavicular line. The signs of hydropneumothorax were, however, still present. On October 16th the heart was beating in its normal situation, and although splashing could occasionally be heard, no other definite signs of pneumothorax persisted. On October 20th, six weeks after admission, all signs of pneumothorax had disappeared, and he was allowed to go home.

He reported himself on November 4th, and with the exception of slight diminution of movement and respiratory murmur at the left base, the signs had cleared up, and no evidence of intrapulmonary mischief could be detected. He expressed himself as feeling very well. Three months later he still looked quite fit and is regularly at his work.

The treatment was symptomatic, and no further attempt was made to remove the fluid.

It is difficult, if not impossible, to determine the cause of the condition. There was certainly no injury. He was not of a specially robust appearance, and thought he might have lost flesh during the past year, but was always able for his work, and had often to work late. He had a slight cough, and when in hospital his expectoration, which was not at any time copious, was examined for tubercle bacilli, but always with a negative result. Von Pirquet's test for