capacity of the 40,000 or more children treated annually should go far toward covering the expenditure.

Finally, we would plead that the matter is very urgent. First, owing to the crying need; one cannot walk through the streets without seeing children and adults crippled for want of treatment.

Secondly, because the local authorities are now becoming alive to the condition of affairs, and are anxious for something to be done. A general organization is wanted for the efficient co-ordination of the work rather than any compulsion of local authorities. In both Shropshire and Staffordshire, where the authorities are already at work, there is general eagerness to join in the local organization.

Thirdly, a unique opportunity is presented now. The Ministry of Pensions is organizing orthopaedic hospitals and clinics, on similar lines to those described, for men crippled in the war; is providing them with the special departments, supplying the apparatus necessary, and is staffing them with surgeons trained in orthopaedic principles, many of whom have had much experience with crippled children.

These pensions hospitals will at first be fully occupied,

but before many months there will be a diminution in the needs of the soldier cripples. Then will come a time when they will have to be cut down, and their staffs gradually dispersed, unless the Ministry of Health has made its plans in advance and obtained the necessary financial provision for taking them over, either in part for children's work only, or as a whole with the responsibility of such war work as remains to be done. The opportunity is exceptional, and the advantages offered by it very great. But preparations should be made by the Ministry of Health immediately, so that it may be in a position to act when the time comes.

The matter is so urgent that Government action should not be awaited. Everywhere efforts should be made to start local organizations which would fit into the general scheme, but such action should be taken in consultation with the Ministry of Health.

We feel confident that, if an organization such as we have outlined is set up, many thousands of children otherwise doomed to the life of cripples will be redeemed to health, and others, though not fully cured, enabled to become self-supporting citizens, and given far greater possibilities of activity and happiness.

TRANQUIL TRACHEOTOMY, BY INJECTING COCAINE WITHIN THE WINDPIPE.*

BY

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As a general rule, the opening of the trachea is accompanied by so much disturbance that there often ensues a scene which the elder dramatists would have described as one of "wild excursions and alarms"! It is depicted in the following words by Clinton Wagner: "The introduction of the knife, together with the flow of blood, produces violent reflex action. The larynx rises and falls spasmodically and very rapidly, and the use of a knife or scissors is fraught with danger. The operator at this moment has need of all his coolness and presence of mind. Blood will find its way into the trachea and lungs, and death on the table from asphyxia may suddenly take place."¹

Apart from the risk of such a catastrophe, I remember the days when, before opening the trachea, one had to advise the audience to "take cover" behind the head of the operating table, as the cough started by the first entry of air into the windpipe frequently resulted in blood being shot out with such force that it bespattered the assistants, the walls, and even the ceiling.

All this commotion can easily be avoided by the intra-tracheal injection of cocaine in the way to be described. I acknowledge my indebtedness for the idea to Dr. Crosby Green, who, in an article on "Thyrotomy for cancer of the larynx," describes how, before splitting the larynx, he injected a 1 per cent. solution of cocaine through the cricothyroid membrane into the cavity of the larynx.² He, it appears, is not in the habit of performing a preventive tracheotomy in this operation, and he makes no mention of injecting cocaine within the trachea. If not the first to use it in tracheotomy, I think I was the first to employ it in this country. This I did in the year 1913.

It is employed in the following way (see diagram): An ordinary hypodermic syringe is charged with about twenty drops of a 2½ per cent. solution of cocaine. As soon as ever the tracheal rings are laid bare the syringe is grasped,

as one does a pen, with the forefinger about one inch from the extremity of the needle, and with this the windpipe is sharply stabbed between two tracheal rings. The middle ring, and little fingers are resting on the neck, and they prevent the point from penetrating more than a quarter to half an inch within the lumen of the trachea. The cocaine solution is injected into the cavity of the windpipe, some five to fifteen drops, and the needle is sharply withdrawn.

The liquid in the windpipe at once gives rise to a slight, stuffy cough. It causes no spasm or distress, and as it trickles down towards the region which endoscopists know to be the sensitive spot of this area—namely, the carina at the bifurcation of the trachea—this tickling cough soon ceases. If there is no great urgency, ten minutes should be allowed to elapse, the time being occupied by clearing the front of the trachea, checking all bleeding, preparing the tube, and so forth. At the end of that time the incision can be made into the trachea and the cannula introduced without pain, spasm, or even the slightest cough, as quietly and smoothly as the original incision through the skin. The calm with which this proceeding takes place is in striking contrast with the agitated, hurried, and often bloody and dangerous operation of former days.

I have used cocaine of the strength of 2½ per cent. for the simple reason that a 5 per cent. solution is generally at hand, and it has been convenient to dilute it one half. I find the 2½ per cent. strength quite as effective as the 5 per cent., which

I tried first. In children a 1 per cent. solution and five drops would be sufficient.

The method is employed with either general or local anaesthesia. Local anaesthesia is sufficient in all adults when the opening of the trachea is the only operation to be performed at one sitting.³ With novocaine used endermically, and the cocaine used in this way within the windpipe, there is neither pain, spasm, nor coughing in performing tracheotomy. A patient gets up from the table and walks back to his ward, to eat his usual meal.

I have records of 25 cases of laryngo-fissure in which this method has been used in performing the preliminary tracheotomy, and the numerous visitors to my practice have been able to see the calm which it secures. In these five years it has been used in scores of cases of tracheotomy by myself, Mr. Hope, Dr. McIlraith, and the housemen in King's College Hospital, with uniformly good results and with no drawbacks.

Semi-diagrammatic illustration showing the injection of cocaine within the lumen of the trachea, as a preliminary to tracheotomy. It also shows the best position of the shoulders and head for tracheotomy, laryngo-fissure, and other external operations on the larynx and trachea.

* A paper read before the American Medical Association (Section of Oto-Laryngology), Atlantic City, N.J., on June 13th, 1919

It has not come my way to use it in children younger than 4 years, but, with the precautions I have advised, I think it can be safely employed. Nor have I had occasion to use it in sudden asphyxia—the “*opération d'urgence*.” Most cases of extreme stenosis of the larynx ought to be provided against by timely tracheotomy, and even when there is dyspnoea, the few minutes' delay entailed by this useful detail are more than compensated by the calm and security with which the operation can be completed.

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¹ *Med. Record*, New York, 1896, xlix, p. 1. ² *Transactions American Laryngological Association*, xxiv, 1913, p. 163. ³ St. Clair Thomson, *Tracheotomy under Local Anaesthesia*, BRITISH MEDICAL JOURNAL, October 14th, 1905.

A CASE OF COEXISTENT SUPRARENAL AND RENAL DISEASE OF UNCERTAIN ORIGIN.

BY

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AND

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AFFECTIONS of the suprarenal body being always of interest, we think that the following case, which came under our observation last November in Palestine, is worthy of record. While the outstanding clinical features were those of profound Addison's disease, the presence of albuminuria and of purpura rendered diagnosis very difficult.

We would add that, as is well known to those who have worked in malarial districts, malignant tertian fever may simulate almost any non-tropical disease; that pyrexia may be atypical and the parasite absent from the peripheral blood on repeated blood examination, especially after quinine administration. It is not surprising, therefore, that this case, occurring at the time when malignant malaria was rife among the troops of the Egyptian Expeditionary Force, received quinine treatment in spite of negative blood films. The *post-mortem* appearances were not those of true Addison's disease.

History and Condition on Admission.

Pte. M., R.A.M.C., aged 32, was admitted as a patient to his own field ambulance on October 21st, 1918, with weakness, vomiting, and night blindness, in evidence for two months. He appeared very weak and anaemic. Blood film negative to malaria. Treated with quinine orally, and evacuated four days later. There is no record of the temperature. A second blood film at the casualty clearing station was also negative to malaria, but quinine was continued. He was admitted to No. 36 Stationary Hospital on October 27th.

On admission the temperature was 102° F. The patient was pale; no icterus, skin dry, recent loss of subcutaneous tissues evident; tongue moist, slightly furred, mouth healthy, breath odourless. Heart no enlargement, sounds rather soft, no thrills or murmurs. Pulse 80, regular, low tension. Lungs normal; liver and splenic dullness normal. Abdomen slightly retracted, no pain or tenderness, no visceral abnormality discovered.

Central nervous system lethargic but mentality normal; cranial nerves normal, no nystagmus, pupils equal, reactions normal; muscles generally flabby, no paresis, sensation normal, no ataxy; knee and ankle jerks present and equal, abdominal reflexes sluggish, plantar reflexes flexor.

Course.—The initial pyrexia had subsided by the following morning, and a subnormal course was recorded for seven days. During this period he was treated with quinine gr. xxx by mouth daily. On the evening of November 4th the temperature rose to 99°, 100° being recorded the following morning, and a further rise to 103.2° that evening. Two blood films, taken during this period, were negative to malaria and relapsing fever. An intramuscular quinine injection (gr. xii) was given on the 6th and repeated on the 7th, the pyrexia readily responding. The temperature thereafter seldom reached the normal line. The pulse and respiration rates were within normal limits until the last few days of the illness, when the pulse reached 100 at times. The bowels tended to constipation until the end, when diarrhoea set in. The average amount of urine passed was about 40–50 oz. daily; it was pale in colour, frequency was not noted. The blood pressure was always conspicuously low. On November 7th the vomiting, which previously had not been greatly in evidence, became more marked. It was always accompanied by nausea, and unrelated to food. Examination of the urine showed specific gravity 1015, ++ albumin, no sugar. The fundi were not examined, as no ophthalmoscope was then available. The cardiac condition remained unaltered, no headache was complained of, and no oedema was noticeable. The following day a blotchy purpuric eruption appeared on the lower aspect of the chest, over the abdomen, and to a lesser extent on the

extremities. Examination of the urine on November 9th showed albumin +, no sugar, no casts or organisms. A differential white count showed increase of polymorphs. The same evening acetone was detected in the breath, and about an hour later the patient vomited a large ascaris worm. Saline and santonin treatment was instituted, no further worm being vomited or passed in the motions, and the acetone odour of the breath gradually disappeared. The vomiting, however, continued, and the low blood pressure, together with the marked asthenia, strongly suggested Addison's disease. A careful examination of the lungs for tuberculosis was negative, and evidence of abnormal skin pigmentation was at this stage too indefinite to be of any service. The deep reflexes gradually disappeared and abnormal skin pigmentation became definite by November 23rd, the distribution corresponding to the usual Addisonian type; the mouth, however, was remarkably free.

At this stage the patient presented the following picture: Signs of general bodily wasting. Mentality normal, very lethargic; cranial nerves normal; no nystagmus. An appreciable degree of bilateral pseudoptosis. Pupils equal, reaction to accommodation and bright light fairly brisk, to shaded light poor. Cilio-spinal reflex not elicited. Abdominal reflex absent. Both knee and ankle jerks absent on reinforcement. Plantar reflexes flexor, but elicited with difficulty. Pronator, supinator, biceps and triceps jerks barely elicited. Muscles very flabby, no actual paresis. No sensory loss. Heart: No enlargement, no thrills or murmurs. Pulse regular, rather rapid, very low tension. Blood pressure (both brachials) by sphygmomanometer 62 mm. Capillary instability marked. Abdomen scaphoid, nothing else discovered. No glandular enlargement. Purpura fading, but still evident. No oedema of legs, back, or face. Blood examinations: Total leucocytes 11,600 (polymorphs 84 per cent., lymphocytes 10 per cent., large mononuclears 4 per cent., eosinophils 1 per cent., myelocytes 1 per cent.). Slight poikilocytosis and anisocytosis of reds, no polychromatophilia, no nucleated reds present. Pituitarin injections brought about no appreciable rise of blood pressure.

On November 30th vomiting became more frequent, and diarrhoea was superadded; motions greenish, and much bright blood present. Faint uraemic odour in breath. No appreciable diminution of urine. Examination (routine) of the stools for dysentery was negative, the condition being ascribed to purpura.

Patient sank and died on December 3rd, being quite conscious till the end.

Post-mortem Examination.

Pericardium healthy, cardiac muscle a little cloudy, no fatty or fibrotic change evident, no hypertrophy. No apparent dilatation. Valves healthy. Coronaries healthy. Aorta, no atheroma.

Suprarenal bodies: Cortex of both glands appeared somewhat shrunken; medullary portion in each case was represented merely by a thin-walled, deeply pigmented sac, containing the slightest traces of a fatty material. Under the microscope the cortex was narrowed and atrophied, no trace of medullary substance, unless represented by some fatty spaces. Some degree of cloudy swelling and granularity of cortical cells.

Kidneys: Right kidney, size of hen's egg, very pale in colour, very adherent capsule, granular surface (granules size of mustard seed). Cortex very narrow, vessels thickened, no cysts or mottling. Kidney not microscopied. Left kidney, slightly smaller than normal, capsule stripped none too readily, surface as in right. Outline fan-shaped on section. Scar near upper pole (? old infarct). Five cysts in cortical zone, containing urinary fluid, one contained small oxalate crystal. Much mottling generally. Vessels appeared somewhat thickened. The microscopic changes were marked swelling and granularity of cells of cortical tubules, marked disintegration of cytoplasm, with frequent absence of nuclear staining. Much granular debris in lumina, in some cases definite hyaline casts. Glomerular tufts more cellular than normal, but no actual fibrosis. Pyramidal tubules showed more frequent casts, but epithelium not so extensively degenerated as in cortical tubules. Some increase of connective tissue stroma in pyramidal zone, but no true fibrosis.

Lumbar glands: Some general enlargement, consistency soft, black in colour, no caseation.

Spleen: Normal (no lardaceous reaction). No malarial parasites. No melanin. Liver: Slightly cloudy, otherwise normal. Stomach: Some catarrh. Intestines: Both large and small intestines showed numerous purpuric patches, especially the former, there being an especially large one in the caecum, with evidence of recent bleeding. No worms present. The remaining organs appeared normal.

Bacteriological report: Lung smears and cerebro-spinal fluid negative to malaria.

Conclusions.

It would seem probable that the renal and suprarenal lesions occurred *pari passu*, the suprarenal element so overshadowing the renal that it is doubtful if the latter would ever have been diagnosed during life but for the albuminuria. Whether the condition was a primary one, or secondary to a toxæmia from other causes is debatable. The occasional pyrexia is puzzling.

It has been suggested that a blood culture might have thrown some light on the matter; we cannot reconcile ourselves to a septicaemia, more or less apyrexial, reacting