A CASE OF UTERINE ARTERIO-SCLEROSIS.

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THE following case of uterine haemorrhage presents features of unusual interest.

Mrs. S., aged 43, was seen in September, 1907, on account of severe bleeding.

Previous History.

She had had three children, then aged 20, 18, and 6 respectively. There had been no miscarriages. She stated that she had excessive haemorrhage at each confinement, and that on one occasion her life was despaired of. She gave a history of similar attacks fourteen years ago, which lasted on and off for seven years; these gradually became less frequent, and then ceased. She had always lost freely at her menstrual periods, and during the past three years they had recurred every two or three weeks. She had experienced no other serious illness of any kind. There was no evidence of disease in the heart or vascular system, nor of any organic defect; there was no history or evidence of syphilis or of haemophilia.

Present Illness.

When seen, the patient was very anaemic, and had evidently lost much blood. She had had several attacks of haemorrhage during the previous days. There was no continuous loss, but a sudden sharp attack lasting only a few moments, during which she would lose, according to her own account, up to $\frac{1}{2}$ pint of blood. No abnormal features were revealed on vaginal or bimanual examination. A probable diagnosis of uterine polypus was made. She was admitted to the Trowbridge Cottage Hospital, and on October 26th the os was dilated and the uterine cavity explored with the finger, but with a negative result. Curettage was performed, and the cavity swabbed out with pure carbolic. The patient remained in hospital until November 16th, and made a slow convalescence. She continued free from haemorrhage until January, 1908, when a succession of fresh attacks occurred apart from menstruation. Ergot was freely given, as also calcium lactate, but without effect. The vagina was tightly plugged, but this also was of no avail. On one occasion an attack of haemorrhage came on as the plug was being removed, and the blood was then seen to issue freely from the os in jets as from a severed artery. The attacks continued for a few days until the patient was almost exsanguine. There was again a very protracted convalescence, and the patient was just able to move about by the end of April. It was decided to send her away for hysterectomy as soon as she was in a fit condition to be moved. In June, however, the attacks recurred with severity, and again no treatment was of avail to check them. On June 28th, an urgent summons was received, and the patient was found to be almost pulseless and apparently moribund from haemorrhage. Two pints of saline fluid were injected under the right breast, and a similar quantity into the rectum, with the result that she gradually revived. The rectal injections were continued during the next few days. It was realized that a further attack would probably prove fatal, so with considerable difficulty the patient was removed in a motor car to the Royal United Hospital, Bath. Hysterectomy was performed by Mr. Lace on July 23rd. A good recovery was made from the operation.

Pathological Report.

I am indebted to Dr. Rupert Waterhouse, Pathologist to the Bath Royal United Hospital, for the following report: The uterus was of normal size and shape. The length of the uterine cavity was 6 cm., the greatest thickness of the uterine wall near the entrance of the Fallopian tube 2 cm. The whole organ was very pale. The internal surface was somewhat roughened, and microscopic examination showed that in places it was denuded of mucous membrane. On section many arteries were visible to the naked eye in the walls of the body of the uterus as tubes with thick white walls and lumen relatively very small. A few of the uterine sinuses were thrombosed. Microscopically the increased thickness of the arterial walls was found to be due partly to conversion of the middle coats into a wavy hyaline material containing here and there a few connective tissue nuclei, and partly, especially in the larger vessels, to irregular thickenings of the intima encroaching on the lumen. The change in the middle coats was very pronounced, and in many of the vessels no muscle fibres remained. A similar degeneration, though less pronounced, affected the arteries of the cervix.

This case, so far as I have been able to search the literature of the subject, does not appear strictly to conform to any recognized type of disease. It is designated "arterio-sclerosis" because the only morbid change discoverable was that in the vessel walls. The number of recorded cases of uterine arterio-sclerosis is small. Barbour¹ in an article on the subject found only 11 previously described. The case now narrated differs in some important particulars from the others of which I have been able to find record.

1. In all the recorded cases occurring during menstrual life the haemorrhage has been an exaggeration of the

normal monthly flow; in the present instance it occurred apart from the menstrual periods, and was of quite a different character. The only other case I can discover in which hysterectomy was performed for similar attacks of furious bleeding is one in which there was found a ruptured varicose vein in the right cornu;² no such condition was present in this instance.

2. The haemorrhage in the present case was obviously arterial; it was seen to be such when the patient was under observation during an attack. Findley³ states that the haemorrhage is in all cases capillary in origin; and a similar observation is made by Dr. Elizabeth Macdonald,⁴ who remarks: "There is no suggestion in any of the recorded cases of severe bleeding that rupture of the presumably diseased vessels had occurred; the haemorrhage occurs by capillary oozing."

3. The most marked pathological change in the present case was the extreme hyaline degeneration of the tunica media, while in some vessels the change in the intima was also very obvious. Findley³ in his review of the subject, states that the thickening is confined to the tunica media and the adventitia; in Barbour's case¹ the alteration in the vessels was mainly due to a thickening of the media, and to a less extent of the adventitia, with in some vessels an irregular thickening of the intima; he also describes a hyaline degeneration of some of the smaller arteries. But I do not find any reference to the extreme hyaline degeneration here noticed, except it may be in a review of a German article,⁵ where it is stated that in four uteri removed for excessive haemorrhage there was found "a proliferation of the tunica media with hyaline degeneration."

It is difficult to understand the patient's history of a former series of similar attacks. She states that they were the same in character as those now recorded, except that they always occurred in the middle of the intermenstrual period. They can hardly have been due to the present pathological condition, or they would not have subsided; a possible explanation might be the presence of retained secundines, a condition cleared up by the last pregnancy.

REFERENCES.

- ¹ *Journ. of Obstet. and Gyn. of the Brit. Emp.*, vol. vii, p. 387.
² *Trans. of Amer. Assoc. of Obstet. and Gyn.*, vol. xviii.
³ *Amer. Journ. of Obstet.*, July, 1905.
⁴ *Journ. of Obstet. and Gyn. of the Brit. Emp.*, vol. xi, p. 155.
⁵ *Ibid.*, vol. x, p. 385.

AXIS TRACTION FORCEPS.*

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AXIS traction forceps are the natural outcome of the improvements in ordinary forceps. Midwifery forceps were first used by Chamberlen early in the seventeenth century. For many years they were used only by the Chamberlen family, who kept their method of delivery a close secret. The original forceps had only a cephalic curve, were short forceps, and had a lock like the modern French pattern (mortice and pin). In 1736 Chapman introduced the loose lock, the one still universally used in British forceps. In 1747 Levret of Paris and Smellie in England, working independently, added a pelvic curve. Smellie also lengthened the forceps, covered the handles with wood, and the remaining portion with leather. In 1767 Stein of Cassel foreshadowed axis traction forceps. He prolonged the fenestrae of his long forceps towards the lock, that he might pass through this space a band of pliable material, and thus make more advantageous traction.

In the nineteenth century Sir James Simpson added a shank to the blade, and his forceps have been the model from which all the other modern forceps have been evolved. In 1860 Hubert invented an axis traction instrument, in which the axial force was applied by a bar extended in the arc of a circle perpendicularly downward from the handle near the lock. In 1868 Morales devised a forceps possessing a perineal curve, in addition to the usual cephalic and pelvic ones.

In 1877 Tarnier introduced his axis traction forceps. In the first model there were three curves, a pair of curved traction rods, and, in addition to the usual French

* Read before the Wellington Division of the New Zealand Branch of the British Medical Association.

lock, a device for compressing the child's head. In later models the perineal curve was abandoned. Nearly every teacher of midwifery adopted the idea of axis traction, and many of them had forceps made under their name with some slight modification of Tarnier's instrument.

To Milne Murray of Edinburgh and Neville of Dublin is, however, due the great use of axis traction forceps, and for all particular purposes the only instruments worth considering are Tarnier's, Milne Murray's, and Neville's. So much for the history, the main lines of which I have closely compressed.

Long forceps, properly used, should pull very nearly in the axis of that part of the pelvis through which it is desired to draw the head at the moment, but this action can be more powerfully and accurately produced by mechanical arrangements in the forceps; by means of traction rods or tractors direct traction is possible in the axis of the brim without any loss of power. Formerly a way of obtaining axis traction was by bending the handles back over the perineum, a method first introduced by Johnston in 1769; or by making a bend in the shank of the instrument, as in Galabin's forceps, when the handles run in the line of the brim axis. The great objection to these methods is that the forceps is not free to follow the movements of the child's head. Axis traction apparatus is so jointed that the forceps is free to rotate and follow the movements of the descending head while traction is being applied.

It is the application of the traction force directly in the proper line and the freedom of the forceps to follow the movements of the head which constitute the enormous advantages of the axis traction forceps. In axis traction instruments the head guides the forceps, while in ordinary instruments the forceps guides the head.

In ordinary forceps the pull is much anterior to the true axis of the pelvis, consequently the head is dragged against the back of the symphysis and is therefore a retarding instead of an accelerating force.

I have always used Neville's forceps, except for one year, when I used Milne Murray's. I prefer Neville's; they are longer and the greater length is an advantage; they are easier to apply, the traction apparatus being fixed after the application of the blades to the head.

Users of Milne Murray's forceps claim that his pattern are really axis traction forceps, as the tractors are attached to the blades, and that Neville's are not, because the tractor is attached to the handles.

In actual practice there is proved to be no difference in the pull; they both pull in the same axis. This is easy of demonstration with a female pelvis and a fetal head. Failing possession of these, lay Milne-Murray's forceps on a newspaper and mark their exact position; pull and mark the line of pull; then do the same with Neville's, and you will find the track of the pull is exactly the same. As a control experiment try the same manoeuvre with a pair of ordinary forceps and note the difference. I have also heard it stated by users of Milne Murray's forceps that they were superior because they had an indicator of the line of pull, for as long as the tractors were kept near the handles one knew where the head was; but that Neville's had no indicator. As a matter of fact, Neville's indicator is very evident, and is superior to Milne Murray's plan in every way; as long as the arrow is watched and kept in position, you know exactly the proper line of pull; lately it has been proposed to put a stop on the indicator, so that you can feel the correct line, and need not look; this can easily be added to any of the existing instruments, but is really not necessary, as it is always advisable to look when pulling. In all axis traction forceps it is most important to leave the handles severely alone, and let the tractor do all the pulling; consequently, in the modern instruments the handles are made very slender.

There can be no question that whenever axis traction forceps are properly made, and properly used, they are a great improvement in every way on the ordinary forceps.

THE Society for the Study of Disease in Children having joined the Royal Society of Medicine as the Section for the Study of Disease in Children, Mr. R. Clement Lucas, the Honorary Treasurer, has handed over to the Royal Society of Medicine a cheque for £261 4s. 6d., being the cash lying at the bank, and has also transferred £800 Consols, the invested capital of the society.

SOME OF THE EFFECTS OF EXCESSIVE SMOKING.

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THE effects produced by the excessive smoking of tobacco have oftentimes been discussed; but too frequently the opinions expressed have been founded on ethical grounds rather than on appeals to clinical evidence and experimental research. Numerous recent investigations have greatly increased our knowledge concerning the pathological processes which may be caused by excessive smoking; and as many instances of derangement of health thus produced have come under my observation, I venture to think that further consideration of the question, on purely scientific lines, will not be out of place.

The first point for consideration is, what are the substances which have been found in tobacco smoke? The list is formidable; it comprises nicotine, pyridine bases, ammonia, methylamine, hydrocyanic acid, carbon monoxide, sulphuretted hydrogen, and oily and tarry products, some of which are allied to phenol. Many of these substances have only occasionally been found, by isolated observers, and then only in traces; the toxic action of others may be ignored. Recent investigations point to nicotine as the sole effective poisonous constituent of tobacco smoke. It was formerly assumed as a matter of course that the alkaloid of tobacco passed over in the smoke; but in 1871 Vohl and Eulenberg¹ denied this, and stated that they had failed to obtain a trace of nicotine in the smoke from 100 cigars containing 4 per cent. of the alkaloid. This result they attributed to the facility with which nicotine undergoes decomposition when exposed to a high temperature; and they held that pyridine bases were the real noxious constituent of the smoke, a doctrine that has been accepted in this country almost up to the present time. Shortly afterwards, Heubel² stated that he had found nicotine in tobacco smoke. Gautier³ also found it along with other basic bodies in the smoke. Thoms⁴ and Schmidt⁵ arrived at the same conclusion. Habermann⁶ devised an apparatus by means of which tobacco smoke was slowly consumed in an intermittent manner as in ordinary smoking, and he found nicotine in the smoke. More recently, Habermann and Ehrenfeld⁷ find that two-thirds of the nicotine of some kinds of cigars passes over in the smoke; with other brands, only one-twelfth to four-twelfths passes over. They state unreservedly that of all the components of tobacco smoke nicotine is by far the most important; the other components, including pyridine, are of little moment. Lehmann⁸ obtained considerable amounts of nicotine from cigar and cigarette smoke, and also from the air of a room in which tobacco was being consumed. He proved that the product was pure nicotine, not only by means of the usual tests, but also by determining its specific rotation and its precise measure of alkalinity.

In addition to chemical evidence, we have the evidence afforded by comparative experiments on animals, which show that the condensation products of tobacco smoke, when injected subcutaneously, produce precisely the same train of symptoms as pure nicotine. Fleig and de Visme⁹ injected into animals the condensation products of cigarette smoke—obtained by passing it through various solvents—and produced the characteristic marked increase in blood pressure like that due to nicotine. Fleig¹⁰ subsequently found that the condensation products of the smoke from tobacco which had been previously deprived of its nicotine, gave negative results. Ratner¹¹ obtained similar evidence from experiments on human beings. In healthy non-smokers he found that the circulatory disturbances caused by smoking ordinary tobacco were either entirely absent, or occurred in only an insignificant degree when tobacco which had been deprived of its nicotine was substituted. From these experiments it is to be inferred that nicotine is the sole potential poisonous constituent of tobacco smoke, as the other poisonous bodies, including the pyridine bases, are equally present in the smoke from nicotine-free tobacco.

Another channel for the absorption of nicotine, apart from tobacco smoke, may possibly be found in the prolonged