

pseudo-leukæmia where the lungs were invaded by extension from the bronchial glands, the growth having broken through the capsule of the gland and producing a diffuse infiltration of the lung with this tumour-like tissue. Such cases would seem to show some affinity with the true sarcoma and they at least suggest a neoplastic rather than a hyperplastic origin for the new growth.

In concluding, I wish to express my indebtedness to Dr. Mary Hannay for the careful histological examination which she has made of the tissues in this case, and to Professor Robert Muir who has been kind enough to examine the sections and who confirms the statements regarding the nature of the tumour growth.

Glasgow.

THE PREMONITORY SIGNS OF ARTERIO-SCLEROSIS.

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ONE hears a good deal about arterio-sclerosis nowadays, and although the meaning of the term is clear enough as indicating a particular morbid tendency the descriptions given of its manifestations vary so greatly that it becomes difficult to form a concrete idea of its clinical significance. Arterio-sclerosis is conceded to be a common condition, examples thereof coming under one's notice daily; in fact, it is stated to be one of the commonest causes of death after middle age, so that the more we know about it the better, especially in view of the fact that if diagnosed before irreparable mischief has been caused its effects may be greatly attenuated and its progress almost indefinitely delayed by appropriate treatment, including diet, medication, and modified habits of life.

Arterio-sclerosis is not "one and indivisible," in the sense that it practically never involves all the arteries to the same extent but weighs especially on individual systems—renal, cerebral, cardiac, hepatic, &c.—creating a morbid state the manifestations whereof vary according to the region involved. We see a good deal of arterio-sclerosis at thermal stations, usually at a sufficiently advanced period for it to be productive of more or less grave physiological disturbance, a period at which, indeed, it is much more interesting from a clinical than from a therapeutical point of view. One only regrets not having had the opportunity of intervening at an earlier date, at a time when it would have been possible to avert, or at any rate to postpone, the structural changes that have thrown the organism out of gear. This fact emphasises the importance of an early recognition of the changes generically described as arterio-sclerosis, which with due attention would be possible.

The tendency to arterio-sclerosis is markedly influenced by heredity, although it can be acquired by certain habits of life. We find that a large proportion of these subjects are the offspring of arthritic or gouty parents who have succumbed to renal, cardiac, or cerebral arterio-sclerosis, and in these the premonitory signs of the degeneration may be observed quite early in life in the form of attacks of epistaxis, migraine, premature baldness, &c. The initial symptoms are such as one would expect to result from slight variable disturbances of this or that local circulation due to changes in the walls of the vessels that interfere with the automatic regulation of the circulation. Any accidental strain thrown on the damaged organ or system accentuates these disturbances and renders them for the time being more prominent. The constitutional symptoms comprise a slackening of the intellectual powers with inability to concentrate the attention and diminished energy for work. The subject is rapidly fatigued and if the effort be maintained headache and exhaustion follow. This tendency to fatigue is visible in the drawn features and psychical depression; in fact, we get a condition which might clinically be described as neurasthenia. Under stress of excitement or physical fatigue there may even be temporary amnesia or disturbance of articulation. This state is associated with a peculiar sensitiveness to the action of alcohol and tobacco which even in reduced quantities give rise to distressing sensations that worry the patient and render him morbidly irritable. Irritability of temper is a fairly constant manifestation,

especially as the victim sooner or later becomes aware that his judgment is not as sound as it used to be, that self-control is lessened, and that the burden of responsibility weighs more heavily upon him. Persons naturally vivacious become somnolent or apathetic. More or less persistent headache is a common feature in the early stages of arterio-sclerosis. Already noticeable on awakening in the morning it is apt to get worse as the hours go by and ere the day's work is over it may assume a throbbing character. It is specially apt to be caused or intensified by intellectual effort, by alcohol, or by excitement of any kind. The significance of headache as a manifestation of arterio-sclerosis can obviously only be determined by a process of exclusion, seeing that it is common to so many other morbid conditions.

Sensory disturbances in one form or another are fairly constant. They may take the form of neuralgia: intercostal, facial, &c., or the patient may complain of tingling or numbness in the limbs, associated or not with slight evanescent paresis of an arm or a leg, such paresis being sometimes accompanied by pain without tenderness in the whole limb. Of all the premonitory signs of arterio-sclerosis *quâ* atheroma giddiness is, perhaps, the most constant and characteristic. Although characteristic, the giddiness only possesses clinical significance when of daily occurrence. It may be occasioned by mere change of position, more particularly from the recumbent to the erect, and in its slight early form it may not amount to more than a feeling of hesitation, a mere lack of stability with a tendency for things to "swim" associated with some mental anxiety. Inasmuch as this instability is not infrequently associated with singing and other musical noises in the ears, it is necessary to eliminate the possibility of the symptoms being due to Ménière's disease or other affection of the auditory apparatus. It may be remarked, indeed, in respect of the pleiades of premonitory signs of arterio-sclerosis that they are only of importance when after careful investigation no other explanation is forthcoming of their presence, since none of them is absolutely pathognomonic of the condition in its early stage.

Disturbances of sleep are common, although genuine insomnia is the exception. Sleep is uneasy, less deep, and consequently less refreshing than formerly. The subject has to coax somnolence and resorts to various devices with that object in view. Then, too, he is morbidly sensitive to the action of stimulants, especially tobacco and champagne, and exciting emotions, whether pleasant or the reverse. This sensitiveness to tobacco, coffee, tea, &c., in persons previously accustomed to unfettered indulgence therein is very suggestive and should excite suspicion.

Mental depression *quâ* neurasthenia is always present in some degree. It may be the direct, immediate result of the disturbance of cerebral circulation or it may be consequent upon the wearying influence of the visceral troubles. The supervention of neurasthenia in a person between 45 and 50 years of age who has never before displayed any neurotic stigmata is highly suggestive, especially when it is characterised by permanence. The depression begotten of business worries and emotional disturbance is ephemeral, whereas that due to organic changes, though variable in degree, is naturally persistent. It may be stated in general that neurasthenia supervening in middle-aged subjects is a symptom of grave prognostic significance, but here again it is only in the absence of other obvious explanation, such as some serious organic lesion or in the initial stage of general paralysis, that it can be regarded as indicative of arterio-sclerosis; in other words, the latter is only one of the possible causes of neurasthenia in the middle-aged.

Among the slight signs that usher in arterio-sclerosis affecting the aorta Dr. Capiello of Naples calls attention to a peculiar sensation in the palm of the hand experienced when pressure is made on the radial artery to the extent of arresting pulsation. Thereupon the subject feels a "breath" or a tingling along the palmar arch. This, however, is a sign of aortic insufficiency rather than of arterio-sclerosis pure and simple, and is therefore only obtainable at an advanced stage. A simple way of determining the existence of general arterio-sclerosis is by estimating what French physiologists call the "stability" of the pulse. Under normal conditions the pulse-rate is eight or ten per minute higher in the erect than in the recumbent position, and when observation shows that such is not the case we may infer that the blood pressure

is markedly above normal, while if the ratio be reversed it may be taken as proved that not only is the arterial pressure unduly high but that arterio-sclerosis has reached the stage of giving rise to definite organic disease, an assumption which is confirmed should we find that the heart apex is displaced to the left.

Exaggerated arterial tension with a small, hard, thready but regular pulse is a recognised sign of confirmed arterio-sclerosis, but in minor degrees it also constitutes an early premonitory sign; indeed, some weighty authorities believe that actual changes in the arterial walls are preceded by prolonged exposure to the ill-effects of persistent high pressure, what Huchard calls the *præsclerous* period, such hypertension being due to spasmodic contraction of the arterioles probably dependent on toxic irritation of the vaso-motor system. High arterial tension, it is true, is commonly associated with chronic renal lesions, but the presence of the latter by no means excludes the possibility of the mischief being due to arterio-sclerosis; indeed, the renal lesion may be, and often is, due to local arterio-sclerosis. When in addition to an abnormally high blood pressure we get some of the other signs just mentioned there is a strong presumption in favour of the existence of arterio-sclerosis.

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A CONSIDERATION OF THE STATE OF THE AUTONOMIC NERVOUS SYSTEM IN ACUTE SURGICAL CONDITIONS.*

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(Concluded from p. 23.)

Injection of fluids.—The injection of fluids is useful in all these cases of lowered blood pressure. It acts mechanically by increasing the amount of fluid in the circulation. It is specially useful in all cases of shock, for here not only is the pressure lowered by dilatation of the vessels of the splanchnic area, but in this condition there has probably been loss of fluid, not only by hæmorrhage and escape of inflammatory fluids, but probably, in the case of abdominal operations, by the evaporation of fluid from the surfaces, as shown by the increase of specific gravity of the blood. At the same time the abnormal viscosity of the blood is, by the increase of fluid, decreased to normal, and the circulation thus aided. The main methods of its administration have been considered in the treatment with suprarenal extract, and of these the continuous rectal infusion proves to be the most satisfactory and the most readily worked. One other method may be used, and that is the introduction of one or more pints into the peritoneal cavity during the course of the operation; not only does this cause an immediate rise of blood pressure, but it has been proved to lead to a marked leucocytosis, which, in a condition of general peritonitis, is greatly to be desired. It must be remembered that this method of treatment may be readily overdone, and, after its re-introduction by Mayo Robson in 1893, there was a tendency to administer it in too large quantities—up to a few years ago from 10 to 12 pints were often administered. If such be done there is a great likelihood of death being caused by œdema of the lungs. It may be stated that, by intravenous methods, not more than three pints should ever be given, and by continuous rectal infusion not more than from five to eight pints. By the rectal method much less harm is likely to be done, for when the normal pressure is reached the excess of fluid is returned and no more is absorbed. Even should it be absorbed, time is given for its excretion to take place by the kidneys.

Mechanical methods.—But little further need be said concerning these; most of the methods have already been considered under the heading of preventive treatment, but, in addition to these, considerable benefit may be derived from the position of the patient. By raising the foot end of the bed 18 inches to 2 feet in a kind of inverted Fowler's position the blood is mechanically tilted out of the portal system to the heart and brain. This position is especially useful, as it aids considerably in the retention and absorption

of fluid administered by the rectum. It is, however, sometimes difficult to determine what course to adopt in cases of acute peritonitis. In them the septic condition is often localised to the pelvis or lower part of the abdomen and thus it is desirable to have the patient placed with the head raised (Fowler's position), so as to aid drainage and to prevent the spread of the sepsis upwards. It must be remembered that such drainage must be brought about early, for after about 24 hours it is no longer possible to alter the site of the fluid by changing the position of the patient owing to the formation of adhesions. The general condition must largely influence one in determining the method to be adopted. If the shock is the most marked factor the patient should be placed with the head down; if not, in the Fowler's position. In doubtful cases it is often best to place him in the first position for two or three hours, then to lower him until he is horizontal; after a few more hours he may be placed in Fowler's position.

Summary of Treatment.

Whenever preventive treatment is possible everything should be done to perfect the patient's general condition; no powerful purgatives should be given, and light, easily assimilated diet should be administered to within a few hours of operation. Throughout the course of the operation and for some hours afterwards blood pressure tracings should be taken; without their aid the patient's condition may not be readily recognised until it has become serious, while if a careful record be kept not only are the slightest variations made visible but the patient's reaction to the various steps in the operation or to any curative measures is readily estimated. They can easily be taken at the wrist without, in the majority of cases, in any way interfering with the surgeon. In any large hospital this duty may be undertaken by a dresser. The methods of taking a reading are easily learnt and may be quickly performed, and many of the after-operation records may be safely left in the hands of an intelligent nurse. As regards the anæsthetic in such cases ether should be always chosen if possible. If this cannot be done and the operation required is one below the diaphragm spinal anæsthesia is by far the best method. Chloroform should be used as seldom as possible. In head operations a quarter of a grain of morphine as a preliminary lessens the shock and allows of less anæsthetic being given.

In operations upon the extremities a great future seems to lie in the use of Crile's pneumatic suit, and one would like to see it brought into far more general use; with it the blood pressure can be perfectly controlled and shock almost completely prevented. In operations upon the abdomen it may be used on the limbs but with less chance of success.

In no case should any form of stimulant, either brandy, strychnine, or ether, be administered previous to, or during the course of, an operation. This is a matter upon which much stress should be laid, for at present it is so often the case that as soon as any signs of shock develop the patient is given 1-60th of a grain of strychnine hypodermically; if the condition does not improve a second 1-60th of a grain is given shortly afterwards. If the centres are not entirely exhausted by this time he is returned to bed and a 1-60th combined with brandy is given until they are. Nothing can be more likely to bring about the very condition one wishes to avoid.

If signs of shock begin to develop, as shown by the fall in pressure, 15 minims of the B.P. hypodermic injection of ergot should be given, which may be repeated after its effects begin to fail, which will probably be in about 20 minutes. If the fall continues in spite of it a vein should be opened and the patient infused; for this purpose one drachm of the liquid extract of suprarenal (adrenalin) to one pint of saline solution should be used. If the operation be an abdominal one, saline solution may be poured into the peritoneal cavity, but in the majority of cases this will be unnecessary.

During the course of operation a 2 to 4 per cent. solution of cocaine should be injected into any large nerve before it is divided, and exposure or handling of deep-seated organs, especially the abdominal viscera, should be avoided as much as possible. The temperature of the operating theatre should be kept warm but not sufficiently hot to cause excessive sweating of the patient. After the operation is completed a tight abdominal binder should be applied so as to contract the splanchnic area as much as possible. When the

* A paper read before the London Hospital Medical Society. (The superior figures refer to the bibliography at the end of the article.)