AN ADDRESS

DELIVERED AT THE OPENING OF

THE SECTION OF MEDICINE,

At the Annual Meeting of the British Medical Association in Ryde, Isle of Wight, August 1881.

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ON THE RELATIONS OF THE CONDITIONS OF THE BLOOD AND BLOOD-VESSELS TO THE HEALTH OF THE TISSUES.

DR. MOXON, in the Croonian lectures of the present year, quotes Professor Virchow to the effect that "we are not to look to the vessels for the initiative in diseases of the textures of the body; that the life of texture is in the texture itself—its pathological as well as its natural life; and that the movements of the blood, in what is called irritative or inflammatory congestion, are secondary to a demand upon the blood and blood-vessels, which demand is made by the proper power of the textural elements." With a full recognition of this truth, the health of a tissue must largely depend on a normal condition of the blood on which this demand is made, and on a healthy state of the vessels through which the demand is supplied. To this line of thought, in connection with the nerve-centres, I invite attention for a few moments.

Taking gout as a starting-point, I put on one side the lately revived suggestion, that the origin of gout lies primarily in a morbid state of the nervous system. Much may be said in favour of this view; whilst, on the contrary, it is difficult to prove that this impaired condition of the nervous centres produces this effect, except in persons hereditarily vulnerable to gout.

But our subject is almost the converse of this. Given gout, on what do the nerve-phenomena, that may manifest themselves in a gouty person, depend?

At our annual meeting, held in Manchester in 1879, Dr. Russell Reynolds sums up the nerve-phenomena that he himself had recognised as occurring with and from gout.

1. Mental disturbances, such as restlessness, insomnia, hysteria, failing memory, want of power of attention, suicidal thoughts, intense melancholy.

2. Pain in the head, of very varied intensity, especially unilateral pain, usually parietal or occipital, forced into almost intolerable severity by movement, and without tenderness of scalp, and not aggravated by mental exertion.

3. Modified sensations, as vertigo, which may be determined by posture; tinnitus aurium in various forms, sometimes of only one ear; deafness, attacks of bewilderment, amounting sometimes to *le petit mal*; certain paræsthesiæ in the limbs, numbness, tingling, creeping, deadness, widely distributed and widely variable; flying and darting pains, simulating those of ataxy.

4. Modifications of muscular action, cardiac palpitation, irregularity of pulse, painful aortic pulsation at and below the epigastrium, various clonic or tonic spasms, priapism; local weakness of muscles, as ptosis, single or double, want of co-ordination of all the limbs. All these phenomena may disappear under anti-gouty treatment, and must therefore depend, not on any coarse structural lesion, but on an abnormality of the blood itself.

I will emphasise the subject of melancholy. "A lady passed several months in the deepest possible depression. She would not employ herself, was fed with difficulty, never spoke except occasionally to express the conviction of her own future damnation. She recovered under colchicum alone; and, much as I dislike this drug, I have never for seven years been able to leave it off with this lady for more than a month at a time, without a tendency to a recurrence of the melancholia."

In other cases, we see the most fanciful delusions, and even considerable excitement, so wholly under the influence of a similar treatment, that they must be placed under the same category. But, though the experience of most of us would verify the phenomena referred to by Dr. Russell Reynolds, there are a series of morbid conditions that depend primarily or secondarily on gouty lesions of the vessels themselves. Amongst these phenomena may be placed a more continuous

form of headache; certain disturbances of mind that are more maniacal than melancholic; epilepsy, with its sequences; and some of the slighter abnormalities of the muscular system, especially, I think, spasm of the muscles supplied by the facial nerve, and of these particularly the orbicularis palpebrarum, and the muscles in its immediate neighbourhood.

The very gradual onset of these phenomena in gouty subjects, their persistence even when the patient may be attacked by a fit of acute gout, their long continuance, the uselessness of all remedies other than gouty in their treatment, and the fairly satisfactory result under so-called gouty regimen over a long period, all point to the fact that these phenomena own a gouty origin, but that they are connected with a condition of mechanical interference with the calibre of the arteries, such as is not unusually met with on *post mortem* examination. And whilst this variety is connected with the first, in each having a gouty origin, it bears a still closer relation to the third variety, in the fact that the vessels are the chief seat of lesion, and that the lesion is tedious, difficult of removal, and not unlikely to lead to prominent morbid results.

I would guard myself from being supposed to mean that this interference with the calibre of the smaller arteries is directly due to urate of soda itself. But the frequency and intensity of atheroma of the arteries in gouty subjects, even short of old age, and where the habits have been temperate, seem to point to the idea that the presence of urates in the blood is specially apt to lead to that degenerative change in the arteries. This is only an analogy with syphilis, in which many suppose (to use Dr. Buzzard's words) that a specific dyscrasia gives rise to equally specific products, which indeed are taken as proofs of a specific dyscrasia; whereas, in many cases, the products are not specific.

My colleague, Dr. Shaw, of the Bristol Royal Infirmary, has lately recorded the *post mortem* examination of a man, who had suffered from left hemiplegia. The important points in the case were these. On running the finger over the surface of the cerebral convolutions, three well-defined sclerotic areas were perceived: 1. Occupying the third superior frontal convolution of the right side; 2. The area of the ascending convolution of the right side; 3. At the right side of the longitudinal figure, about midway between the vertex and the corpus callosum. The sclerosis was found, on section, to be limited entirely to the grey matter, except in the third spot, where it extended into the white substance. In the first spot, the white matter had become considerably softened; and, on section, presented the appearance of a cyst, with firm walls and fluid contents. The left corpus striatum was the seat of degeneration, being yellowish in patches, soft throughout its internal capsule, part of its claustrum, and nearly the whole of its lenticular nucleus. The left carotid artery was blocked by, and also surrounded with, a mass of recent soft lymph; the left posterior communicating artery and the left posterior cerebral were also occluded. The right middle cerebral was blocked, as it lay on the island of Reil; the left middle cerebral was pervious. This case is instructive, not only as showing how fairly a hemisphere may be nourished with the posterior communicating and posterior cerebral arteries blocked (the blocking of the carotid being probably the immediate cause of death), but especially with reference to the effects on the right side, where the right middle cerebral was found obstructed. There was reason to believe that this blocking had been gradual; if not primarily thrombotic, the original embolus allowed some small portion of the blood to pass, and the vessel was only completely blocked later by the thrombotic accumulations; and the result was not primarily softening. Where this existed, considering the rapid supervention of cerebral necrosis, it must have commenced very shortly before death. But the effect of gradual interference with the blood-supply was sclerosis. Softening, as a result of cutting off the blood-supply from a portion of the brain, is common enough in the experience of us all. Sclerosis, as the result of partial thrombotic blocking, or of a diseased condition of artery, that may easily determine thrombosis, and even, before it leads to that lesion, may materially diminish the blood-supply to the region beyond, has hitherto not been so fully recognised—though Hamilton speaks of thickened vessels in cerebral sclerosis.

Does it not account for some of the gravest phenomena in a disease like gout?

The difficulty in assigning symptoms, in these cases, to lesions of the brain is, that, at the termination of chronic gout, we often meet with the complication of small granular kidney. This lesion was found in the following case.

A gentleman, aged 75, had been gouty for ten years. For three months, he complained of headache over the right parietal region. He gradually lost memory, and, towards the last, consciousness; and his death was preceded by two days of coma. A fortnight before death, he

had incessant jactitation of the head, both arms, and both legs, which seemed half voluntary, half choreic; and, though very severe, did not trouble him at all. The urine was albuminous. At the necropsy, the skull was very thick. The dura mater externally seemed healthy, but both middle meningeal arteries were rigid. The dura mater on the visceral side was thickened, and presented scattered effusions of blood, equal on the two sides. The arachnoid could be peeled away, leaving the blood on the dura mater. The arachnoid and pia mater were much thickened over all the convexity, evidently a chronic thickening. This was seen to a large extent at the base of the brain. There was no softening of the brain. The vessels were everywhere atheromatous, especially the vertebrals, the basilar, the posterior cerebellar, and the Sylvian arteries with their branches. The kidneys were small, granular, and covered with cysts.

In a case of a lady, aged 68, in whom recovery took place, headache, diplopia, strabismus, with certain paræsthesiæ of the limbs, and with twitching (almost convulsion) of the legs, indicated slight meningitis of the base. She had been gouty, and came of a gouty family. There was no albuminuria. Under counter-irritation, iodide of potassium and lithia, she recovered after a very tedious illness. An advanced arcus senilis, tortuous temporal arteries, and somewhat rigid radials, showed that the arterial system was seriously implicated. In a minor degree, the lesion here was doubtless of a similar nature to that in the previous case, but affecting the softer membranes only.

So much am I inclined to connect subacute fibroid inflammation of the brain and meninges with narrowed calibre of arteries, that I doubt whether such a condition is found, either as cerebral sclerosis, as firm adhesion of the dura mater to the skull, as subacute inflammation of the dura mater on the visceral surface, or as chronic leptomenigitis, without some morbid condition of the cerebral or meningeal arteries of such a nature as to narrow their calibre.

That gout is associated with meningitis, has often been recognised. Next, perhaps, to a morbid condition of the vessels themselves, the most frequent cause of thrombosis is just that hyperinotonic state of blood that obtains in gout, and a form of meningitis is produced that resembles tuberculous meningitis.

This morbid condition may vary considerably. The one factor necessary is, that an abnormally small amount of blood should be able to pass. Is the lesion atheroma, tubercle, syphilis? Is it slight arteritis? Is it embolus, so small that, though caught at a bend in the artery, it yet allows a minute stream of blood to pass for a time? Is it one of the varieties of thrombus? The effect may be the same, whatever the ultimate causation.

That this is so in tubercular meningitis, is recognised by all. This lesion never occurs without tuberculous arteries; and a tuberculous artery is one whose calibre is narrowed by pressure from without by tubercle in the adventitia.

I have lately met with a case that had suffered long from the effects of syphilis. There was no albuminuria. The case resembled the first one of gouty pachymeningitis, except that during life there were epileptiform attacks; and after death, although the chronic inflammation of the dura mater was over the whole convexity, the hæmorrhage from the visceral surface was unilateral. Here the vessels were much diseased.

Many observers—Westphal, however, disagreeing—consider that posterior sclerosis of the cord is connected with syphilis in a proportion from 50 to 80 per cent. of all cases. If so, will it not be found—has it not, in fact, been found already—that the posterior spinal arteries are in many instances narrowed; or that the vertebrals themselves, from which these arteries arise, have some obstruction to their calibre? Ross speaks both of gummata forming in the walls of arteries, which may either project from the external surface or into the lumen of the vessel, and in the latter case may obstruct the vessel completely, or be washed off, to be arrested as an embolus in one of the small branches; and of an infiltration of cells, that may take place chiefly in the adventitia of the vessel, or between the intima and the epithelioid lining, these cells undergoing partial organisation and cicatricial contraction; whilst Wilks mentions, in a case of syphilis of the spinal cord, that the most striking change was in the vessels. He quotes also Dr. Mickle's observation of cases of insanity after syphilis, in which the arteries were found thickened, and various degrees of meningitis in different parts of the cortex. It is a very suggestive point, that posterior sclerosis of the cord is tolerably often associated with general paralysis of the insane—a condition not only recognised of late as frequently connected with syphilis, but manifesting *post mortem* just those sclerotic foci in the brain, and that subacute fibrous inflammation of the meninges, of which mention has been made in connection with diseased arteries.

The vessels, too, are found thickened in posterior sclerosis not associated with syphilis. And, to make one more reference, Dr. P. Baumgarten describes the case of a woman aged 32, who suffered from marked

cerebral symptoms. At the necropsy, the arachnoid, between the pons Varolii and the chiasma, were changed into a brawny bacon-like tissue. The posterior cerebral arteries must have alone supplied the whole of the cortical region with blood. All the other arteries were extremely diseased, and some obliterated. The middle cerebrals showed marked thickening. With regard to the diffused changes in the vessels, they consisted essentially of endarteritic growths.

The analogy in the pathological appearances is pretty nearly complete between the affection of the arteries in syphilis, with the consequent sclerosis and meningitis, and the interference in the calibre of the arteries in many cases of gout, with the various forms of meningitis found under such circumstances; and the stages in gout, in tubercle, in syphilis, are—1, a dyscrasia; 2, some morbid condition of artery, interfering with its lumen, caused directly or indirectly by the dyscrasia; 3, chronic fibroid inflammation of the meninges or nervous centres, or both.

Nor are proofs wanting in other parts of the body of the truth of this statement. In so-called fibroid phthisis, and still more in the fibroid thickening of lung that often accompanies the growth of tubercle, the original coarse lesion is apparently a vascular one. The same may be said in hepatic cirrhosis, and in alcoholic non-malignant sclerosis at the pyloric orifice. So, too, in gouty cirrhosis of the kidney, long before the blood has become so loaded with effete non-depurated material as to exercise a deleterious action on the arteries, these vessels are found diseased, anticipating, or at most synchronous with, the renal changes. It is, therefore, not to be wondered at, that similar vascular lesions in the neighbourhood or in the structure of the nervous centres should induce the same irritative changes in membranes so largely composed of fibroid connective tissue, and in nervous centres provided with so extensive and so delicate a neuroglia.

AN ADDRESS

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ON AN OPERATION FOR THE REMOVAL OF INTERNAL PILES.

EVER since my election to the Presidency of this Section of the British Medical Association, a feeling of intense surprise has been rarely absent from my mind, together with the question: How did it happen that I, a simple M.R.C.S., and of so small reputation, came even to be thought of for the important duty of presiding over the sayings and doings of men to whom I could be content to listen for instruction? I have not been able to so much as imagine an adequate reply to this question.

When, some weeks after my acceptance of the honour, I learnt that I should be expected to give an address, my surprise was turned into something akin to dismay. I have, however, two consolations: 1. That the address is limited to twenty minutes; 2. That I am in the hands of professional brothers, who will judge my shortcomings with generous leniency, and give me credit for sincerity of endeavour.

How to occupy, not unprofitably, the time allotted, and no more, was a problem not easy to solve. To have attempted an oratorical display would have been a foolish impertinence, and it was not in me to achieve success. I came to the conclusion that it would be more decorous in me, and more respectful to you, to bring to your notice an operation for the safe removal of that kind of internal piles having the hæmorrhoidal veins as their seat—an operation to which I have given much thought. I know of no more distressing affection, when it has become chronic. The pain and irritation, aggravated by constipation and defecation; the exhausting discharges of blood; the occasional difficulty and pain in returning the tumefied and tender parts within the sphincter; and last, though not least, the depression that almost invariably attends this disease, cause an amount of mental and bodily suffering very sad to witness. When this affection has arrived at this degree, there is, as we all know, no cure but by removal.

There are now four recognised operations with this object: the old one, or tying in two portions, leaving the parts to slough away; a second, in which the mucous membrane is first snipped, and the vein alone is tied, which is much less painful; the third, Mr. Cusack's operation by the clamp and actual cautery, modified by Mr. Henry Smith, which is less painful than either, but is not so secure against