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Clinical Notes and Observations on Migraine

Migraine, which may be looked upon as one of the Minor Ailments, in as much as it never proves fatal and is unassociated with any definite organic changes, is much more common in occurrence than is perhaps commonly supposed; many cases escape notice from the fact of their being confounded in the mind of the sufferer with so-called "bilious" attacks; other cases are unnoted from the fact that skilled observation is never directed to them as the sufferer may look upon the attacks as things which are natural to him and to which, treatment cannot, or need not be applied. Sometimes even if the case comes under observation, the attack may have passed, and the description of the symptoms by the patient may be so inadequate that the real nature of the condition suffered from, is not suggested to the mind of the observer, and treatment may be applied for and applied to some of the subsidiary factors, associated with or underlying the essential condition. The separation of the attacks by long periods of perfect health tends to increase the tendency for the condition to be observed in this fashion; and again as regards enumeration of the cases, they seldom come under observation in our hospitals where exact statistics are kept, but are commonly seen in the ordinary course of general practice, where the aggregate number necessarily becomes less apparent. Migraine seems to me thus a condition well suited for

the ensuing of a man engaged in general practice, and if one is on the look out for such cases it is somewhat surprising how comparatively large a number is met with; during the past seven years I have met with 33 cases and as a result of my observation of these, I feel justified in attempting to send in this way my clinical experience.

The condition is of interest, not only from the point of view of the extraordinary phenomena displayed in the course of its symptoms, extraordinary considered in the light of their severity in conjunction with their transient nature; but it is also of clinical interest and importance because of the extremely prostrating character of the attacks, which may seriously interfere with the work of the unfortunate sufferer, tending to occur as it does at those very times, when the nervous system, undergoing great strain, its fullest vigour and capacity is required of it. In the same individual the attacks may vary much in character and in symptoms, so that opportunity for observation is naturally greater than in a condition which is more constant in type.

It would perhaps first be desirable to briefly recapitulate the principal views at present held in regard to the nature and causation of migraine. The consensus of opinion is to look upon it as a toxaemia, dependant upon a blood condition dependant upon associated disturbance of the liver and intestinal tract. It has been supposed that conditions arise in the intestine such as to permit

the absorption of toxins formed there, and in the normal state not absorbed, and these toxins may then cause an initial disturbance in that part of the system which has naturally a low resisting power associated with this it has been supposed, that a functional inadequacy of the liver by permitting similar absorption, may lead to an aggravation of the symptoms.

The essential feature of Migraine is the headache, hemicranial or not, but always paroxysmal, this latter being the distinctive feature of the headache, considered in association with the sensory prodromal symptoms. I shall use the term "prodromal symptoms" in the sense of being prodromal to the headache.

As regards the etiology of the condition, the most common point in the history I have found to be a gouty or rheumatic family history, and I believe this is in accordance with the general opinion; as regards the association of Migraine and Epilepsy Sir Wm Gowers states in his recent work on "Epilepsy and allied Disorders" "that true association is casual" and although he has met with cases where migraine developed into epilepsy and the converse, and he describes one case where the two conditions were coexistant, "Epilepsy," he states, "developing from Migraine as a direct result of the effect of the intense pain & associated cerebral disturbance, the influence of this may be traced through stupor, delirium & loss of consciousness to definite epileptic symptoms."

Migraine has been described (Bartels in Von Ziemssens Cyclopedia of medicine

as occurring in association with contracted kidney, and cases have been described where deposits of urates have been found under the scalp and elsewhere, but such cases are rather to be looked upon as what is known as "Symptomatic Migraine", true migraine strictly speaking, is always idiopathic, that is, idiopathic in the sense that no organic change can be demonstrated directly connected with it.

Instead of giving an individual account of the cases which have come under my notice, or of a selection from these, I shall adopt the method of associating the cases in connection with the different parts of the System and organs affected, a method which, I think will be more conducive to lucidity. In viewing the series of cases I am struck with the prevalence of occurrence of minor eye defects, small errors of refraction, not so appreciably great as to have attention drawn to them as such, but existant nevertheless and in several cases having an apparent definite relation to the severity and frequency of the attacks. Out of a total of 33 cases, fifteen of those on careful examination of the eyes, showed the presence of errors of refraction, of these, ten were astigmatic and the remaining five, myopic or hypermetropic. In none of these cases was the error greater than 1.50 Dioptries, so that defective vision was normally not complained of, and only on careful enquiry was it admitted that close application to near work necessitated at frequent intervals complete rest for the eyes.

Correction of the refractive error in all these cases resulted in improvement as regards severity and frequency of the attacks of Migraine, but in no case resulted in an absolute cure, but in cases where attacks had been experienced once a month, four, six, nine or twelve months might afterwards intervene between.

I know that refractive errors have long been looked upon as a causative factor in Migraine, but the points I wish to emphasise are the very slight errors which were present in these cases, and the only partial nature of the curative result from optical correction; in most of these cases, I may add, after the glasses had been worn for a short time for reading & near work generally, the patient found it beneficial to comfort, to wear them constantly and for all purposes.

As regards eye symptoms during the attacks of migraine, I have found in my cases, that Hemianopia was present during what I may call the "prodromal period" in all the severe attacks, and associated with it or preceding it, was present the central Scotoma commonly described. The hemianopia I have usually found to be homonymous, but in several cases temporal or nasal hemianopia was present, and in two cases present in one eye before the other was affected; in one case in particular there was a peculiar distribution of the hemianopia, that of a Scotomatous

Slightly astigmatic,
aged 33, a subject of typical migraine whose attacks of headache were always preceded by

temporal hemianopia of the ~~right~~ left eye, followed by nasal hemianopia of the right eye, the succeeding headache always occurring on the right side, I may note that he was ambidextrous, as a result of the loss of a finger of the right hand in childhood, a point which is possibly suggestive in association with the occurrence of aphasia in migraine.

In another case, that of a married woman aged 25, otherwise perfectly healthy, attacks of severe migraine occurred, lasting sometimes for two days during the whole of which time she complained of diplopia, a somewhat unusual feature in migraine; examination of her eyes showed only the presence of a small degree (·75 D) of myopic astigmatism.

In the most severe case I have seen, the sensory paraesthesia affecting the hand occurred on the right side first, and there was hemianopia of the right temporal field only, every attack being associated with severe and alarming aphasia, to the patient the most distressing feature of the attack

In six of these cases which presented errors of refraction, I found in association with astigmatism Heterophoria of slight degree, exophoria and esophoria, and on exaggerating the defect or latent tendency, by means of prisms, suitably placed, several of these patients expressed the opinion that the resulting feeling in the eyes, suggested to them that they were just going to have an attack of migraine.

In some of these cases was the heterophoria more than trifling in extent, but they complained that when reading for long periods the eyes had the feeling of being "twisted". The symptoms complained of were not those of defective vision or those common to eye strain, but symptoms which seemed to be directly connected with the defective parallelism of the visual axes. The heterophoria in these cases seemed to be the result of the small error of refraction, and on correction of the astigmatism with cylindrical lenses, the "twisting feeling" complained of disappeared. At the same time the severity & frequency of the attacks of migraine were much reduced.

It thus seems to me that the Heterophoria had more than a casual association with the migraine, and in fact bulked more largely as regards influence in causation, than the refractive error itself, and it seems reasonably possible that in other cases showing refractive error, although heterophoria cannot be demonstrated, its existance in slight degree is possible, the failure as regards demonstration arising either from the fact of its very slight amount, or from its only being in existance under circumstances involving considerable strain to the eye, either as regards time or the nature of the occupation.

In migraine one attention is necessarily directed to the Gastro-Intestinal tract, because the patient often associates his condition with so called Bilious or

Stomach attacks. In my experience, I have not found that stomach conditions bulked very largely as regards symptomatology during the attacks; with the exception of vomiting I have seen nothing of an acute gastric character, but in the intervals between the attacks, there was present in nearly all these cases a mild form of dyspepsia, evidenced by slight flatulence after meals, and delay in digestion. This dyspepsia was never of such a character as to give rise to serious discomfort and was looked upon by the patient as a matter of slight importance. As a result of timing the digestion I found in several cases marked delay in its completion, and in the emptying of the stomach contents into the intestine.

As regards the vomiting during the acute attacks, nausea has not been a prominent feature, the act of vomiting did not proceed from an uncontrollable impulse dependant upon intense nausea, but the patient vomited gladly at a varying stage of the attack, usually at the time when the prodromal sensory symptoms were fully established, and just before the headache began. The act of vomiting was not exactly central in type, but approximated much more closely to that in character, than to the ordinary vomiting of an acute gastric attack.

In slight attacks occurring in alternation with more severe attacks in the same individual, and in such slight attacks peculiar to an individual, I have seen such vomiting occur very early in the attack, before

any definite sensory symptoms had occurred, only a feeling of general depression being present, described as being typical to the patient before a severe attack of Migraine. In such slight attacks the act of vomiting has been followed by great mental relief and a complete restoration to a feeling of well being, so that often the patient was able to at once partake of a hearty meal with no ill effects whatever. The vomit consisted of undigested food with the normal constituents of the gastric juice, and I have not found the presence of any evidence of fermentation during such an attack or indeed in the case of the severe attacks.

As regards the condition of the Bowel, in several cases I have noted what one might call "Paroxysmal Constipation. The bowels would act freely and regularly for several weeks, and then followed, day by day for about a week, gradually increasing constipation, until an aperient became necessary. In one case failure, on the part of the bowel, on one day was invariably followed by an attack of migraine on the following day, unless an aperient had been taken in the evening. During this period of constipation the motions were scybalous in character, not only the ordinary large scybalae coming from the large intestine, but also small dry hard masses from the size of a pea to that of a small bean, apparently coming from the small intestine. The first effect of a mild aperient

acting on the small intestine, was a motion consisting mainly of three small cycloids.

Concerning the fact that vaso-motor spasm was once practically unanimously held to be the direct cause of the symptoms of migraine and that the view is still widely held, a certain interest attaches to the condition of the blood vessels in this condition. I have found, as is commonly the case, that the early sensory symptoms are associated with high tension in the superficial vessels, and the headache with relaxation of these vessels. In the intervals between the attacks the pulse tension has usually been normal, but in some cases I have found a constant tendency to high tension gradually becoming aggravated until an attack occurred. In other cases there has been normal tension in the intervals with a distinct rise a few hours or in some cases a day, before any attack. A point which is perhaps worthy of note is that administration of vaso dilators such as Amyl nitrite during the part of the attack associated with high tension, has no influence upon the sensory symptoms, but seems to precipitate the headache and make it more violent; one has of course to bear in mind that the usual duration of the sensory symptoms is so short, as to give little chance or time for a drug to act, so that the action of vaso-dilators upon these symptoms must remain a matter of doubt.

Alcohol, in the form of a strong mixture of whisky and water I have known to appear abolish the sensory symptoms coming on in a slight attack, an action, I take it, probably due to a milder stimulation generally, with relaxation of superficial blood vessels.

In regard to these sensory symptoms which play such an obvious part in attacks of migraine, there is a feature associated with their onset which I have noticed and not seen elsewhere described, a feeling described by the patient as one of dread, fear, loathing or disgust. This feeling does not seem to depend upon the gastric symptoms, when present, or upon any other of them, but is a feeling which I have had described to me as being peculiar to these attacks, and so vivid in character that the mere description or discussion of the symptoms of an ordinary attack is sufficient to recall the feeling so aptly to the patient, as to cause him to desist. This feeling does not seem to be associated with any of the physical symptoms of the attack, neither with the numbness, tingling or eye symptoms, but seems to be a sensation more psychical in character, and recalls to one's mind the classical "feeling of impending death" associated with attacks of angina pectoris, although much less in degree. The initial sensory disturbance, in my experience, is a tingling on the palmar surface of the thumb which spreads to the fingers and palm, followed in a

few minutes by numbness. The tingling and numbness then appear on the dorsal surface of the hand, starting in the thumb. As a rule I have found this parasthesia not to extend beyond the wrist, but I have occassionally seen the front of the forearm involved. The face has usually been involved a few minutes after the hand, one half being affected occasionally but more commonly the lips on both sides and the nose on one side. Associated with the condition in the hand there has commonly been a feeling of weight, and stiffness in their movements but this latter seems to be purely a feeling, no actual stiffness, or weakness being present.
This feeling of stiffness and a tired feeling were often complained of in the muscles of the arm, shoulder, back and legs. I have not seen a case where the sensory symptoms developed in the legs. In those cases where Aphasia has been present, it has always been coincident in point of time with the numbness in the lips, which were usually so affected. In the slighter forms of aphasia present in these cases of migraine, the difficulty consisted in impaired articulation. Correct articulation was possible on exercising great care and speaking slowly, but on speaking at his ordinary rate and with his usual unappreciable mental effort, there was a tendency for the initial letters of words to become transposed, thus in saying such words as "good day," he would

tend to say "dood gay". This is a result such as is obtained by the ordinary tongue tripping sentence, and seems to depend upon an imperfect control of the motor speech mechanism; in the ordinary tongue tripping sentence words are associated such as to put the greatest strain upon the mechanism; in the case of migraine this result is obtained in the association of ordinary words. There seems to be no difficulty in producing any particular sounds such as would suggest a paralysis of the lips or tongue, or a nasal tone such as would be produced by a lesion of the palate, and one must distinguish this condition from confusion and elusive speech, neither of which it resembles. In the slighter cases in which with great care articulation is possible, the speech is naturally somewhat staccato in character. This condition at first sight would seem to be a motor defect, but considered in the light of the purely sensory character of migraine it is improbable that this should be so, and considered in association with other cases showing symptoms of aphasia, a sensory causation is much more probable.

In one very severe case of Migraine, typical in every way, aphasia of a most severe and distressing character was present. It was that of a man aged 30 who had suffered from such attacks from the age of 16, and in all seven attacks the aphasia was present. I had twice the opportunity of examining him during these attacks. The aphasia began when the numbness of the

lips appeared about fifteen minutes after the attack began, but as rule for an hour or more before the attack began he was conscious of a feeling of intense well being, which often enabled him to foretell the onset of an attack. First there was slight difficulty in articulation such as I have described and in about ten minutes after its onset he began to find difficulty in recalling words to his memory, and their meanings if the words were suggested to him were lost. He had marked difficulty in speech, apparently from his difficulty in recalling the words or their meanings, and words spoken to him sounded strange both in form and in meaning. He could not read words although he could read letters, and his spelling was defective. He could not write correctly and such words as he managed were mis spelt, and he could not intelligently read them after he had written them. He seemed conscious of his mistakes in speech and in writing but could not correct them, but it is doubtful whether this feeling was not simply due to the fact that he failed to recognise words when written or spoken by him; he could copy words correctly. In another case the symptoms were similar but not so marked. In both of these cases the aphasia began with the slight difficulty in articulation common in migraine, when slight attacks were experienced the aphasia never passed beyond that stage; usually the aphasia in these two cases lasted from ten minutes to half

an hour, and was followed by the usual headache. In both cases there was considerable mental confusion and dipsomania in thinking, and hemianopia was present lasting for about five minutes, disappearing with the onset of numbness and tingling in the fingers and thumb before the onset of the numbness in the lips and the aphasia. Amongst the other symptoms present were the hemianaesthesia in the nose, stiffness in the affected fingers, in fact those of a typical severe attack of migraine.

In those who suffer from migraine there is a tendency to attacks of severe headache, hemicranial or not in type, but associated with none of the usual sensory symptoms, which they present in typical attacks. These attacks usually begin with headache on waking in the morning and the pain becomes more severe as the day goes on; sickness is not present unless food is taken, in which case the contents of the stomach are voided, often within an hour after the meal. The essential feature of these attacks is the feeling of mental dullness and confusion with which they are associated, a mental condition obviously not dependant upon the pain, as it is frequently out of all proportion to the latter, being often present in considerable degree when the headache is slight, and such as would not give rise to complaint if it were not for the presence of the associated mental condition.

It is just a question whether such headaches occurring in the morning are not the headache following an attack of migraine occurring during sleep, the feeling has been repeatedly described to me as being exactly that dazed, dull feeling which follows an ordinary attack. Considering that attacks of epilepsy which is looked upon by some as the motor counterpart of migraine, are known to occur in sleep, the occurrence of attacks of migraine during sleep is more than probable.

To return for a moment to the causation of the aphasia described, the symptoms point to a disturbance of the auditory and visual speech centres; it would seem that the apparent motor aphasia (apparently in articulation) so commonly present as the only symptom of aphasia, is dependant upon an insufficient action of these two sensory centres, something in the nature of a delay in the supply of words to the motor centres. The association tracts between the centres might be suspected, but the symptoms in these severe cases definitely point to the centres themselves as the centres of disturbance.

As regards constitutional causes of migraine, the most common mutant causes have been, errors of refraction, caries of the teeth, and gastro intestinal disturbance. In so far as this latter is concerned it is impossible to say in how far gastro intestinal conditions are causative and in how far they

are resultant in nature. We know how close a relation there is between conditions of the nervous system, functional in character, and the intestine, mucous colitis is an example of such a profound influence associated with nervous symptoms. Mental strain, continuous for several days or lasting only for a few hours may result in an attack, the duration of the strain seems to be of less importance than its intensity.

As regards treatment I direct my attention to the search for an initative factor and in most cases it is possible to find one; palliative measures in the form of drugs given during the attacks, I have not found very successful as regards results, large doses of phenacetin and the other coal tar derivatives are sometimes useful in allaying the headache if severe, but the sensory symptoms preceding the ~~attack~~ headache, which are often more distressing to the patient than the headache itself, I have found to be unaffected in severity or duration by drugs. Again, considering the severely prostrating character of this condition, I think it advisable to administer stimulants rather than depressants when drugs are called for.

When we come to consider the direct causation of Migraine we are faced with a difficult problem, we have little to go upon in the way of direct evidence and we find ourselves in a vast

field of speculation. The proximate mechanism of the attacks is obviously nervous, and irritative conditions act as the exciting force acting on this nerve mechanism. The symptoms preceding the headache, the situation of the paraesthesia in the extremities x not corresponding to the distribution of peripheral nerves, the hemianopia, usually homonymous, and the aphasia, all show that the disturbance is central in origin. So also the aphasia, obviously not dependant upon ~~motor~~ muscular disability or interference with ~~groups~~ centres & muscles corresponding with groups of muscles, show that the disturbance is cortical, and not bulbar in origin. The homonymous hemianopia shows that the disturbance lies behind the chiasma at least. The anatomical position of the various centres concerned is not such as to suggest that the irritative cause is of a gross character, they are too far apart to suggest that and all the symptoms of the condition counter indicate such a view, but there can be no doubt of the cortical nature of the disturbance. The blood supply of the parts affected is by the middle cerebral artery with the possible exception of the parts involving the hemianopia and the visual speech centre. Here latter are supplied probably by the posterior cerebral artery, but in how far they may obtain a partial or supplementary supply by the middle cerebral artery it is impossible to say.

The vaso motor symptoms, vaso constriction of the superficial vessels at the beginning of the attack, suggest a similar state of the vessels of the cortex × the symptoms produced are indeed suggestive of those recognised, as arising in an anaemia of the brain. It can certainly be raised as an objection, that the condition of the superficial vessels is no guide to that of those of the brain itself, but at any rate a hyperaemia of the cortex would produce symptoms which are not present in migraine. Viewing the matter from a clinical point of view a vaso motor explanation is one which well covers the ground and is in accordance with the transient nature of the sensory disturbance. The presence of toxins in the blood may aggravate the condition Considering the state of the gastro intestinal system, one is justified in believing that here we have a steady irritation continuous over a long period, this irritation may be due to toxins or not, but as a result either directly, or through the action of such toxins we get a disturbance of the nervous system through the nerve supply of the stomach and intestine. We have such a condition arising in the case of infants, where gastro intestinal disturbance, such as fermentation and the irritation of undigested food, sets up spasms or convulsions more or less severe in character. (I have twice

Seen where epileptiform convulsions occur in older children, in one case after a hearty meal of unripe apples, and in the other case after a similar meal of vegetable debris. In one case the fits lasted for three hours and in the other for five hours and were only controlled by Chloroform, followed by complete recovery and no recurrence of the fits after free evacuation of the bowels with Castor oil. Why such a vaso motor spasm, if such it be, should have such a selective action on certain centres it is difficult to understand, but I would suggest that the highly delicate and sensitive nature of the visual and speech centres, and that of the hand, which has to perform exceedingly delicate and complicated movements would render them more easily and deeply susceptible than other centres. Again, Considering the mental dullness which is so consistent a feature of the attacks, it is reasonable to suppose that the whole cortex or one side or the greater part of it, may be affected, and that the nature and degree of the circulatory interference, is such as to lay open to attack, first the sensory centres and of these, the most delicate in function, first. Migraine, compared with "Epilepsy", as pointed out by Sir Wm Gowers, "occupies a much greater time in the evidencing of its phenomena; it represents, in a way, a sensory epileptic attack, discharged at a much slower rate."

It might reasonably be supposed that migraine represents the sensory prodromata of an epileptic attack, with the discharge spread over a longer period, and not going on to irritation of motor centres as in epilepsy.

I have endeavoured this to give my clinical experience of migraine, and have ventured to add a few speculations as to its causation, because after one has viewed such phenomena as one sees in migraine and pondered over them, one is almost driven to put two and two together to find a cause. The literature of migraine is most extensive and I have not tried to deal with it; when I have spoken of facts which have not come under my own observation, there have been facts of common knowledge as regards the disease.

Whatever may be the proximate cause of migraine, its successful treatment undoubtably depends upon the recognition of irritative causes and on their removal.

S. Millar Waugh