Remarks

on some of the Symptoms of Locomotor Ataxey from Cases.

Being a Thesis presented by
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The disease Locomotor ataxia has received a great deal of attention especially during late years - Lockhart Clarke defined it as (I quote from Watson) "consisting of "a peculiar unsteadiness in the performance "of certain voluntary motions, arising from "the loss, to a greater or less extent, of voluntary "influence to control and combine, or co-"ordinate, the action of the muscles necessary "for the steady performance of these movements"

Since then our knowledge has been greatly increased and we meet with numerous and undoubted examples which such a definition would not embrace.

Duchenne published his first monograph nearly thirty years ago. To that writer we owe much as he was the first to isolate the affection from other nervous disorders with which it had frequently

been confused and in recent years the disease has been recognised under almost as many different aspects as those presented by Gout; - but, although exhibiting such diversity, we are now able to make our diagnosis with much greater security.

What then are the early symptoms on which we place most reliance? Is it on imperfect locomotion? - decidedly not, although were we to follow Lockhart Clarke it would most certainly be necessary to search for the existence of peculiarity of gait as a sine qua non for our diagnosis. I do not mean for a moment to underrate the importance of this symptom. When it is present we have certain evidence of the disease in question but

there are many, many, examples which would escape our observation altogether were we to pin our faith to Lockhart Clarke's definition. This is no small matter because, if one is at all possible, as some hold most strongly, it can only be accomplished at a period a long way antecedent to the appearance of staggering gait.

Most recent observers have limited the most constant and reliable symptoms to two in number. These are the "lightning pains" and the absence of knee phenomenon - The pains described as lightning are of remarkable constancy - Dowse even goes so far as to say that no true case of Locomotor Ataxia ever existed which was not preceded by that symptom - I shall be able to show, however, that he is

too sweeping in his assertion although in the vast majority of instances the Statement is correct. Buzzard inclines more to the absence of Knee reflex - a discovery we owe to Westphal - and its importance is so great in Buzzard's opinion as to justify a diagnosis when its existence is supported by the presence of a single other common Symptom.

My experience, so far as it goes, does not allow me to point to any single indication which might be described as the initial feature. I think, however, we may safely support the view that either of those Symptoms are amongst the earliest manifestations -

In referring more particularly to Westphal's Symptom

I need not delay to explain how this phenomenon is investigated, nor must it be supposed that its absence is confined alone to this disease - we must allow the possibility of a natural peculiarity without the existence of any lesion. It is also in abeyance when we have any gross lesion of the lumbar portion of the spinal cord; and this forces on our consideration whether the act is purely reflex or not. Its disappearance in gross lesions of the lumbar cord points strongly to a reflex theory but many deny this although all are agreed that it depends on the completeness of a reflex arc - Destruction of that arc in any part of its course necessary involves loss of the phenomenon - In Locomotor ataxia the arc is certainly broken on the Sensory side by the existence of Posterior

Sclerosis - Another argument arises from the circumstance that in these rare cases of Tabes with retained Knee reflex the lumbar region of the cord or, practically, the Knee reflex arc has been found in a normal condition - I do not quite understand Buzzard when he states that the phenomenon is not a spinal reflex although dependent upon the integrity of the reflex arc. In the face of such evidence as has been detailed, it seems difficult to avoid the conclusion of a purely reflex theory after all.

It is conceivable that the reflex might not be obtained when there existed great wasting of the Quadriceps muscle but such a case would explain itself -

Practically its absence, without a coarse lumbar myelitis which would demonstrate its existence by marked paraplegia; or emaciation of the Quadriceps, or any other evident explanation points strongly to the existence of Tabes and is one of the most delicate manifestations of its presence. It is not, however, always an initial Symptom - One of my Patients suffered from very marked loss of Co-ordination in the muscles of both lower and upper limbs with other Symptoms for eighteen months before admission and still presented slight but distinct evidence of Knee reflex. A diagnosis was withheld and the Progress of the case carefully followed and it is interesting to note that all trace of the reflex disappeared

in the course of a month, first in the left limb and then in the right. another patient, formerly a soldier, was also under observation. He could walk without the slightest tendency to stagger although requiring guidance on account of blindness. The important points in his case were, the existence of advanced white atrophy of both optic discs (W. Reid) with a most characteristic history of lightning pains and a great degree of anaesthesia in both upper and lower limbs. The existence of a slight response on tapping either patellar tendon was remarked for some time after admission but during residence it completely and permanently disappeared.

It is interesting to note that in

another case, during treatment with electricity, and in the course of great improvement in gait and diminution of pains Patellar reflex manifested itself after being in abeyance for at least a year.

Cases have at times been recorded presenting one peculiarity - namely the existence of P. T. R. (patellar tendon reflex) — are all such really examples of Tabes? May some of them, at least, not be due to a much more general Sclerosis presenting, in their invasion, more or less strongly Tabetic features? I venture to think so and it has been my fortune to meet with one instance which strongly supports this view. — It is evidence enough, in my mind, to emphasise the

importance of Westphal's test and to lead to a most guarded diagnosis when any indication of knee reflex can be obtained. I followed the progress of this case with the most intense interest and subjoin a brief resume of its principal features.

Joseph Queen act. 28. Machinist. admitted June 81 During the Summer of 1880, about a year ago, patient suffered from very severe spasmodic attacks of abdominal pain with violent vomiting, flatulence, obstinate constipation, rigidity of the abdominal walls and other symptoms. Before this his health had been perfect and between the seizures he was quite well. The clinical history bore such a close resemblance to Charcot's descriptions as to justify the diagnosis of gastric crisis. In a few months

his health was apparently fairly restored. Shortly afterwards however he became a victim to lightning pains. They were "awful sore" "like shoving a lance down his leg" and of momentary duration. About the same period he began to experience difficulty in walking. He staggered like a drunken man and could not go many yards without laying hold of some support. He was fairly unable to turn quickly without falling and was equally unfortunate when asked to stand with his feet together and eyes closed. along with this there was considerable trembling and tingling in his lower limbs. His pupils were observed to be unequal but there was no ocular motor paralysis -

There were several peculiar features in this case - By far the most interesting was the presence to a normal extent of Patellar tendon reflex. Anaesthesia of the lower

limbs did not involve either Sole where Cutaneous Sensibility was found up to the usual standard. and he walked as well with his eyes ~~open~~ Shut as when they were found on his feet.

The case was diagnosed by a Neurologist of the first rank as an example of Locomotor Ataxia with an unusual condition of Patellar tendon reflex.

He was dismissed, after treatment, somewhat relieved.

about fifteen months afterwards, during October of this year he again turned up. Patellar tendon reflex was most distinctly exaggerated; his gait and equilibration were much improved. The other features were pretty well as formerly and in particular plantar Sensibility remained unimpaired.

additional symptoms however presented themselves. The most striking of

these were + very marked muscular tremor of the upper and lower limbs, head + tongue: Speech was greatly affected; some words he was scarcely able to pronounce at all and under any excitement he took the power of articulation altogether. The tremors also involved the oculo-motor muscles; if his face were maintained for any time on one object, constant minute oscillations of both globes were observed and there was also distinct paresis of the right external rectus.

These trembling movements were entirely absent when Patient was at complete rest. Under the slightest muscular action they were at once demonstrated.

There was also a history of vertigo, failure of memory, undue emotional tendencies, mental instability and colour blindness. At no time was he troubled with headache

or sleeplessness.
Incoordination, without however anaesthesia, had extended to his upper limbs.
The muscular System was well developed.

The history of this case covers a period of a little over two years. Its progress had therefore been unusually rapid.
There can be no doubt however that this patient is the victim of a much more general sclerosis than would be embraced by the designation of Locomotor ataxia.
The primo facie resemblance to a case of Tabes was very striking and at first very suggestive of that disease.
But the condition of the patellar reflex was always a difficulty

and quite sufficient I think to justify a more guarded diagnosis not only in this case but in others of a similar class, and it seems fair to presume that many such recorded as uncommon examples of Tabes would, in course of time have explained their peculiarities by exhibiting evidence of a much more general lesion.

Besides the three phenomena the case under discussion was unusual in other respects. It is by no means common to find plantar sensibility unaffected in Locomotor ataxia. I do not recollect such an instance in any of my cases. It seemed to be invariably exaggerated or depressed - Nor did he complain

of any girdle sensation altho' that is naturally of less importance as a diagnostic symptom.
Of much more consequence was the fact that his gait was not aggravated by directing his eyes away from the floor. This might have excited the suspicions of the most inexperienced; nothing is more characteristic of the ataxic patient than the intensity with which he fixes his gaze on the ground before him with the result of materially aiding his power of equilibration.
His age too it may be observed is below the usual limit.

What then, is the diagnosis? What

in the sequence of events?

The commencement of his illness was similar to the commencement of many instances of locomotor ataxia. He suffered from gastric crises. By and by he obtain a distinct account of lightning pains and then a peculiar gait but not the true staggering locomotion of a Tabes.

In the course of fifteen months he was again under observation with a marked aggravation of his condition. The former indications were all present and in addition there was considerable muscular tremor affecting the body generally and particularly giving rise to a faltering articulation and nystagmus.

To this already long

Catalogue must be added. Vertigo
Colour blindness, failure of memory
and other evidences of cortical
degeneration.

This most interesting case well
displays the difficulty to be
met with in classifying the various
forms of Sclerosis.
I think however we can distinguish
a much wider manifestation of
Symptoms than would be embraced
under the name of Locomotor ataxy
or posterior Sclerosis.
But we are brought face to face with
an acknowledged difficulty. Is it
always possible to draw a sharp
line between different varieties
of this morbid condition of the cord?
We are perhaps scarcely warranted

in doing so. What can be described as nothing else than an undue anxiety on this point by many authorities has led to much confusion.

It is perhaps a less difficult matter to say what the case just detailed is <u>not</u> than to give it a specific name. There can surely be no hesitation in objecting to the designation of Locomotor Ataxia. Such a name would by no means indicate the extent or characters of the lesions existing.

We have ample evidence of central disorder as well as spinal and we have present many peculiar features not exhibited by a case of Posterior Sclerosis properly so called.

Before proceeding further let me refer to Hammond's description of multiple centro spinal sclerosis.

By this distinguished neurologist the Symptoms of the disease are said to be mainly –

" Headache vertigo ocular troubles
' failure of hearing and very often
' defective articulation.
' More or less mental weakness.
' Tremor is often seen first in the
' tongue, more frequently in the
' eyeball – nystagmus.
' Incoordination, Paralysis, Contractions."

Bristowe in speaking of multiple sclerosis details symptoms, two most characteristic of which are

" Trembling coming on only when the muscles are being exerted

difficulty of speech, oscillation of the eyeballs, paralysis and contractions and impairment of the mental functions."

These references are not complete but they betray a close resemblance to the symptoms exhibited by our patient, Queen.
Where they diverge is in the sequelae of Paresis and late rigidity. Such manifestations are often among the last to be evolved. Weakness in the limbs did exist but muscular contractions had certainly not appeared. In this respect the descriptions are not in accord, but the general characters of the cases agree remarkably and there is surely a much freer participation

for classifying the case under discussion with examples of Multiple Sclerosis rather than with those of Locomotor Ataxy or Posterior Sclerosis.

On Tabetic pains

Let us now briefly notice the second of the early symptoms to which attention has already been drawn namely - lightning pains. Their character in recent years have received so much careful investigation that it seems almost unnecessary to go into any detail. How are they to be diagnosed from other neurons pains met with in Rheumatism, Neuralgia &c? Mainly by their momentary duration. Patients usually describe them in somewhat similar terms and their impressions are often conveyed in exceedingly graphic language. They are "like shocks of electricity" "stinging" "shooting" "lancinating" shocks. "momentary flashes" - One man told me that under their influence he was tempted to tear his hair out, others liken them to a "corkscrew" or red hot

iron going into the flesh" - another man said they "paralysed him" during their existence and "were like to throw him out of bed".

There is no limit to their disturbance; most commonly the legs are first attacked but they also occur in the arms, head and trunk, also in the perinaeum and in two of my cases they assumed the character of repeated stabs into the rectum as if produced by a sharp knife.

There is no doubt that the onset of these pains is usually an early incident in the disease. To such a rule there are however exceptions. I had one patient in whom there was not the slightest indication of any sort of pain for at least a year and a half after his appearance

of ataxia and in this case the exciting cause of their development seemed due to the application of electricity for about a week. This statement was carefully verified and is in striking contrast to Dowse's assertion that no case of Locomotor ataxia ever occurred without lightning pains in the pre-ataxic stage.

There is another class of pains to which I desire to refer. Little attention has been paid to them by writers but I am convinced that they are very characteristic and of considerable importance. Patients usually compare them to a "beating" others speak of them as "burning" "boring" "toothachy" in nature. They are not like lightning pains. of momentary

duration but often last persistently for hours and always for some endurable interval of time

To cite illustrations. A complains of gnawing toothachy pains in the ball of each foot continuing for hours and destroying his rest. B of similar sensations in his malleoli and in the lower third of his thighs. C says that his testicle feels as if compressed in a vice and a "gripping" sensation across the bridge of his nose is a source of great distress to D.

Many further instances might be detailed but these give a very fair indication of their usual character. Their value in diagnosis does not of course rest so much in their non existence as in their association with other tabetic symptoms

apart from these two varieties of pains there are other perversions of sensation of extreme interest. Let me illustrate what I mean by a few cases. for instance

P. H—. complained of great numbness in both lower extremities but especially in the Soles. Now, note, when either Sole is gently stroked very marked increase of sensitiveness was exhibited. Patient at once drew up his legs in a spasmodic manner. add to this the following extract from two ward Journals "a striking feature in connection with marked hyperaesthesia of soles, is, that, on electrical test being applied to limbs the muscles respond readily but when even the slightest power, which causes acute and unbearable pain to patient, is used to the Soles

patient makes no effort to withdraw his feet and simply says he feels it, and even on pricking pretty forcibly with a pin no unusual movement results"
In this instance subjective anaesthesia was a most marked feature and the man could tolerate without inconvenience the most powerful electrical currents - on the other hand tactile sensation was so greatly excalted that convulsive movements of the limbs were at once induced on gently stroking the soles.

A complete negative to this case was afforded by that of J. M —. also in the wards. This patient was not conscious of the slightest degree of anaesthesia - Weber's compasses

however revealed marked delayed and diminished Sensation in the lower extremities. The same phenomena was manifested under thermal investigations. and the slightest electrical current could be endured on either foot or outer aspect of either leg without inconvenience.

Take another case. J. S—. complained of great numbness in each lower limb and added that the Soles seemed to feel the "deadest". both Weber's Compasses tolerably satisfactory results were obtained. an interrupted current, however, which caused acute pain in the dorsum of each foot was just manifest in either Sole but, note, stroking the Sole was keenly felt - in fact could

not be tolerated and was at once followed by immediate involuntary withdrawal of the limbs. This condition of matters attracted the attention of patient himself who remarked upon it and also stated that for some time past he had been compelled to give up washing his feet with cold water on account of the excessive pain so produced which extended up the limbs and did not disappear for several days.

Another of my Patients exhibited the same peculiarity in his face - He had been unable to apply cold water to it for several months or even to sit anywhere near a fire on account of the stinging pain "like nettles" so induced.

The facts demonstrated by these cases are certainly remarkable.

P. H—. was as already stated an instance of the association of great Subjective anaesthesia with an exalted Sense of touch.

The same condition existed in the case of J. S—. Gently stroking the soles of his feet could not be tolerated by him although the most powerful electrical currents, applied to the same parts, were just appreciated and no more.

The Sensory features presented by J. M—. were of an extremely interesting nature and in direct contrast to the two already detailed. By means of Weber's compasses, hot and cold tests, and electricity, positive proof

was obtained of greatly heightened acuteness of sensation. Yet the man himself was absolutely unconscious of any subjective anaesthesia even when his attention was particularly directed to the circumstance.

The two cases last referred to had no ataxy. There was nothing in their gait likely to attract attention. On testing for Patellar Tendon Reflex no evidence of it existence could be discovered in either patient. They also detailed very characteristic histories of lightning pains and both were affected with optic atrophy involving corresponding loss of sight. It is interesting to know from Dr Rose that a paralysis of the sense of touch may be associated with an exaltation towards impressions of pain and vice versa—

Such examples could be readily multiplied. but enough have been detailed for our purpose. How are we to account for such paradoxical results? In regard to the lightning pains they are almost always an early indication. Buzzard says that they much more often than not precede all the other symptoms. at this period we have a hyperaemic condition of the affected portion of the cord or as Dowse describes it a vaso-motor paralysis and this by producing an increase of pressure on the individual nerve fibres of the posterior sensory root zones may, in the absence of other affections, presumably account for the causation of the pains.

Brown Sequard found that lateral section of the cord was followed by hyperaesthesia on the same side which he considered due to irritation produced by vaso-motor paralytic distension of the vessels of the cord on the side of section.

This discovery although very important does not explain the contradictory evidence of perverted sensation. The same investigator however believed as the result of his experiments that tactile impressions are conveyed in the anterior part and impressions of pain in the posterior part of the grey matter.

This explanation is purely theoretical but in the absence

of proof we are obliged to fall back on theory - That at any rate offers some interpretation of the facts which we can at present account for in no other way than by supposing with Brown-Sequard that tactile and painful impressions pass to the brain by distinct channels.

On Aetiology

The question of aetiology is one which is surrounded by difficulties and this arises from the fact that so many examples exist in which absolutely no trace of a cause can be obtained.

In the greater number of cases of Locomotor Ataxy which I have had an opportunity of observing there is not a great deal to be said regarding Causation. In three of them absolutely no explanation of their origin could be obtained; the victims were temperate quiet hard working men and there was no evidence of any constitutional taint. One, only, presented a previous history of Syphilis; this man and another, in whom however there was no Suspicion of Syphilis, improved considerably under mercurial treatment continued persistently for a lengthened period. Two of my patients blamed frequent exposure to cold and wet. Intemperance

had probably a good deal to do with the Causation in three cases and Sexual excesses in two others - Regarding one of the latter the following details may be noted - It appears that he was one of four companions who were in the habit, for a number of years, at holiday seasons and more particularly during the Fair and Race Year times, of taking prostitutes to some Country place where they cohabited with them and indulged excessively in Sexual intercourse at all times of the day and night. He states that he always returned from these bouts in a most depressed and enfeebled State of health and had to place himself under Medical treatment. It may be added that two of these companions are dead & One became a victim to the Same disease as the Case before us who makes the fourth.

It happens that I have at present under treatment an interesting example of atony in a female patient.
Her history is briefly as follows. - For a number of years she was the victim of severe pain in the lumbar region of a persistant and aggravated description. She also suffered from obstinate vomiting, profuse uterine haemorrhage, bearing down sensations, and other symptoms suggestive of pelvic disorder.
She came under the care of an obstetric physician, my friend Dr Smith of Weymouth. The history led to an investigation of the pelvic organs. a large Uterine fibroid tumour was discovered which by its weight had produced a retroflexed condition of the Uterus - on attempting to

replace this organ great difficulty was experienced apparently on account of some adhesions to the posterior wall of the pelvis but with perseverance all difficulties were overcome.

For a time, considerable improvement followed the operation, especially in regard to the degree of haemorrhage. Gastric instability, however, continued to distress her. Food of every kind was rejected. She also "threw up" great quantities of a green coloured fluid — accompanied by much flatulence.

A little later, about three years ago, her attention was particularly attracted to a growing weakness in her legs, so that she was unable to walk with

her accustomed freedom and felt a great want of control over her lower limbs. Following on this she began to suffer from severe lancinating pains. Her description of these is most graphic. They attacked her in various parts of the body, round the abdomen and particularly in the lower third of each thigh and in the ball of each foot. They were of momentary duration and "like as if a corkscrew were suddenly driven into her flesh". Bouts of these pains would last for hours at a time, coming at all sorts of time and disappearing again for days. She complained of great numbness reaching from her toes as high as the hips and a feeling of a cord tied tightly round her

body at the level of the umbilicus.

With such a history the condition of Patellar tendon reflex was investigated - no response could be obtained. The limbs are somewhat emaciated, a result easily accounted for by want of use for nearly three years. She has absolutely no incoordination of her upper limbs and pupillary reflexes are found to be normal. Intense hyperaesthesia is exhibited when the lower limbs are gently stroked particularly on the soles and inner aspects of the legs. This is of great interest when contrasted with patients account of a feeling of numbness. No chemical examination has yet been made.

In attempting to walk, with assistance, the limbs are thrown wildly about and the heels thumped down on the floor with a most unnecessary degree of force; and when asked to stand with her heels together and eyes closed or to turn sharply round when her eyes are fixed on the ceiling all equilibration is lost.
It may be added that she has now very little annoyance from the uterine affection.

There cannot be any reasonable hesitation as to the existence of Posterior Sclerosis in this case.
I think we may assume that the attacks of "indigestion" come under the definition of Gastric crises; at any rate there is no doubt of the

disappearance of knee reflex, of lightning pains, ataxic gait with perverted sensation of the lower extremities and feeling of cord around waist.

Can any connection be traced between the state of the uterus and the condition of the nervous system? I think so. The uterus in its abnormal position and increased size pressed for a considerable period of time on the sacral plexus and gave rise to the usual discomfort in the lumbar region. Constant irritation from this source would naturally produce an inflammatory condition of the plexus and of all regions of the cord the posterior columns are by far most frequently

affected and the fire nerve Kindled would continue to burn — This explanation is so far assisted by the fact of the nervous phenomena being confined to the lower half of the body. There is no incoordination of the upper limbs at all and no interference with normal sensation. The pupils react normally. The optic discs are unimpaired — The area of cord affected with Sclerosis diminishes in the direction of the Sclerosis whether ascending or descending and the symptoms are also marked in a corresponding degree.

In the case under discussion we are assuming that the original irritation was situated as low down as the Sacral plexus. The symptoms are a good deal restricted

in distribution – a circumstance which lends some colour to our argument.

I submit that there is nothing extravagant in such a theory as the one advanced. It at any rate provides a possible explanation for the appearance of tabetic symptoms by pressure of a pelvic tumour on the sacral plexus.

Personally I have not been able to trace a history of heredity but I have knowledge of one family who after intermarriage for Generations now exhibits this disease in three members.

There are still however two other cases which I have studied with extreme interest. As neither case presents all the common Symptoms it may be advisable to enter into some detail regarding them.

Case I William Dawson. aet 53. Moulder.

The main points are as follows.

<u>Ataxic Gait</u> Patient complains Spontaneously of "a sort of staggering in walking" inability to "walk at night as well as he used to" and "if he turns suddenly he is sure to give a stagger". He is very strong in the statement that his walking is not so good as formerly, especially at night, and he adds that "if he looks at two stars he is sure

to Stagger". When patient is asked to walk along the Ward floor there is no unsteadiness in his gait till his eyes are closed or directed to the ceiling when he at once staggers and on turning Sunday the same thing occurs. He can accomplish the equilibration test without swaying to any great extent.

Reflexes Patellar Tendon Reflex is entirely absent. There is no ankle clonus. Tickling the Sole or irritating it in various ways does not demonstrate plantar reflex which is only observed on applying a very strong induced current.

Sensation defective. Tactile Sensibility is found remarkably deficient and this was confirmed with Weber's compasses, the points of which were only distinguished as two at considerable distances apart with the strongest induced current, (which the writer was unable to endure) there was formed

to be an entire absence of Sensibility on the plantar aspect of both feet in front of the instips. The Same Current was only Slightly felt on the dorsum, rather better on the legs and very acutely in the thighs -

Paralysis Paralysis was found on the right side of his face, Slight but distinct and there was also some paresis of bladder and bowels. The Sense of Smell had entirely disappeared. He also complained of a "thickness" and faltering in Speech and if he gets excited he is unable to articulate at all.

Previous history - On the 26th Sept: 1881 patient was Struck on the top of his head by a heavy piece of iron falling from a height. He was at once brought to the Western Infirmary Suffering from Shock. On examination a deep longitudinal wound was found over the vertex in the middle line about four inches long. The bone was exposed and grooved but no fracture detected. In nearly two months

he was in a very critical condition and for days quite delirious. On 29th Nov. it was noted that patient was well with the exception of slight discharge from the wound on his head. and on Dec. 6th he was dismissed after nearly two and a half months residence.

On the 26th Jan. 1882 he returned and on examination I found more or less evidence of the nervous Symptoms already detailed.

On the 9th April 1882 he again presented himself with the wound in his head still open. A rough piece of bone was found protruding and removed. It measured 1½" in length by ½" broad. The sinus then healed up completely.

Since then he ~~has~~ been was constantly under my observation as an outdoor patient until I left the Hospital on 1st Nov. 82. On 26th Sept. 82 I examined him minutely and the details already referred to form a brief Synopsis of the report.

Case II Patrick Holmes. Labourer. aet 60 admitted 4th Oct. 1882. The following is a Synopsis of the report.

Seven years ago patient fell about Sixteen feet over a window and sustained a Severe injury to the back of his head. He says his Skull in that Situation was fractured - at all events he was taken to the Greenock Infirmary where he lay for three or four days unconscious and delirious, was about two months in Hospital and Seventeen weeks off work altogether.

Since then he has suffered from a certain amount of giddiness and a feeling of insecurity if he turns round sharply or goes up a ladder. Eighteen months ago he found that in walking over rough ground he had a tendency to Stumble and Stagger and was compelled to pay more attention to his Steps. For the past year there has been a progressive anaesthesia in his fingers and hands. He complains greatly of difficulty in buttoning his clothes or in putting his fingers into his pockets

or in accomplishing such manipulations as counting money or in carrying a vessel to his mouth. Three or four months ago he began to experience great coldness in his lower extremities followed soon by gradual numbness and tingling which now extends as high as the groin -

For the past month there has been a very decided increase in his symptoms and especially as regards his gait which has become very unsteady. For a week before admission his gait has been so irregular and stumbling that he has been quite unfit for work.

On examination his g. locomotion was found to be most typically ataxic and he was quite unable to walk or turn with his eyes closed or directed away from the ground or to perform the equilibration test at all. Such difficulty arose purely from inability to co-ordinate the muscular movements of his limbs. The same uncertainty existed when he lay flat

in bed. When in that position if he were asked to cross his limbs over each other he lifted them much too high and if requested not to do so he rubbed them cautiously and forcibly against each other and could not execute these movements with any precision or without the expenditure of undue force. Patient emphatically states that under such circumstances he is absolutely free from any giddiness which is only an occasional symptom and only experienced if he turns round sharply or goes up a ladder and so on.

Incoordination of upper limbs also exists to a marked extent. Besides the weakness of it already noted patient has very marked difficulty in buttoning his shirt and also in touching various parts of his face with either index finger, when his eyes are shut, this being most marked in the left arm.

Anaesthesia of fingers and hands extends to

about the middle of the palm. In the lower limb it extends well up into each thigh and is so marked that when the strongest induced current (which causes the worst intolerable pain) is applied to the Soles patient makes no effort to withdraw his limbs simply remarking that he just felt it and even on pricking pretty forcibly with a pin no unusual movement results. Reflexes. Patellar tendon reflex is completely absent. There is no ankle clonus. Cremasteric and other superficial reflexes are decidedly diminished. -

Pains. With regard to pains the following is worthy of note. During residence patient occasionally suffered from very severe attacks of pain in the ball of each heel. He describes his sensations as if there were a "heating" in each heel. Both were usually affected about the same times and the pains came and went in both simultaneously. They

usually occured during the night and lasted for various periods, Sometimes as long as four or five hours; completely destroying his rest. Patient never contracted Syphilis nor has he suffered from rheumatism. I venture to submit that these pains have a tabetic significance. Patients suffering from Tabes dorsalis have frequently complained to me of two kinds of pains. one answering to the well known 'lightning' character and the other of a more continuous heating boring burning nature precisely as in this case. Girdle sensation was also present in this man in the shape of a persistent cold band round his body about the level of the umbilicus.

Now the Question may be asked. Are these two really cases of Tabes Dorsalis? I submit that they are and will try to put forward satisfactory reasons for my diagnosis.

The Symptoms in each case point strongly to one of two diseases - either of the Cerebellum or Posterior Sclerosis.

As an example of the first the following patient died in my wards - a post mortem examination revealed the existence of a large tumour of the Cerebellum.

Mrs Gray act 39 Housewife admitted 5th April 82 Illness of about three years duration. On admission the principal features of the case were; Severe constant occipital pain; failure of vision with engorgement of both optic discs (Dr Thomas Reid) and nystagmus; Exaggerated patellar tendon reflex; Intense vertigo ("an overwhelming tumbling sensation") faintness, attacks of Syncope and a feeling of impending nausea and vomiting aggravated by the slightest movement or even in turning her eyes upwards.

Patient was quite unable to walk; apart from weakness, she had such an amount of Swimming

Sensation and giddiness that even with an attendant on each Side Supporting her it was with great difficulty that she moved a few yards.
Sensation in her extremities normal.

Before proceeding further it may be as well to recapitulate the Symptoms of the last three cases.

William Dawson	Patrick Holmes	Mrs Gray
	Slight giddiness in going up a ladder electra	Intense vertigo with attacks of faintness, nausea and vomiting
Inco ordination of lower limbs	Inco-ordination of upper and lower limbs.	No inco-ordination
No patellar tendon reflex	No patellar tendon reflex	exaggerated patellar tendon reflex
Anaesthesia of lower limbs	anaesthesia of upper and lower limbs	Sensation of upper and lower limbs unimpaired.
	Burning boring pains	Severe constant occipital pain
Paresis of face speech bladder and bowels		Failure of vision with engorgement of both optic discs (Dr Thomas Reid)
Loss of smell		and Nystagmus.

Regarding the cases of William Dawson and Patrick Holmes. I do not advance them as typical instances but, I urge respectfully, that they present strong evidence of a tabetic character. Dawson never suffered from pains - Dowse states dogmatically that he does not believe a case of Locomotor ataxy ever existed without lightning pains in the pre ataxic stage. I have had under observation for Six months a perfectly characteristic example of Tabes where there was an entire absence of these pains until late in the disease and until long after the occurrence of staggering Gait. The absence of head Symptoms also points strongly to a Spinal lesion and Erichsen remarks loss of Smell from which Dawson suffers as an occasional result of Spinal affections. Patellar tendon reflex is, as a rule, exaggerated in gross lesions of the Cord and its absence is by no means a common sequence of Spinal injuries - Regarding this phenomenon Buzzard says " This test of Westphal's is so delicate, that the accompaniment of any one

"of the ordinary Symptoms of Tabes along with it, ought, in any opinion, to enable us, with very little hesitation, to relegate the case in which this association is exhibited to the class of tabes dorsalis."
Now besides other symptoms this man has ataxia and marked anaesthesia of the lower extremities which are perhaps ~~two~~ the most common of all tabetic Symptoms.
The details of Patrick Holmes' affection are still more conclusive of Posterior sclerosis. The giddiness of which he complained was really trivial and unaccompanied by any head pain or other Cerebral disturbance.
Mrs Gray's case speaks for itself.
In conclusion I cannot do better than quote from Hammond regarding the differential diagnosis of Tabes and Cerebellar disease.
"Derangement of locomotion certainly does result from injury or disease of the Cerebellum. Beyond a doubt this disorder is, however, chiefly due to vertigo. There

are, moreover, headache, vomiting, and eventually in some cases hemiplegia - The characteristic symptom of cerebellar lesion is vertigo; and, although this is sometimes met with in Sclerosis of the posterior root zones, it is not a prominent feature, and is rarely present at all except in the very earliest stage - In the cerebellar lesions the cutaneous sensibility is unimpaired, whereas in posterior Spinal Sclerosis it is always diminished -"

If the view I have taken of these cases be correct we have apparently two instances of Tabes dorsalis resulting from fractured Skull or at all events from some injuries to the brain - In the course of reading it has not been my fortune to find any recorded examples of this disease originating from a similar cause.

I do not feel competent to explain their pathology - at first sight the ~~influence~~

but I should like to state shortly what seems to me to be a possible explanation.

The nervous sequelae may, I need hardly say, be simply a coincidence. It is hard, however, to avoid the suspicion that they have a more or less intimate connection with the original injuries. But how is this opinion to be maintained? Certainly not by supposing that a continuous sclerosis from the brain could have gradually invaded the posterior columns in a downward direction. - Such a theory is at once negatived by the law of Waller.

But does it not seem reasonable to suppose that the disturbed condition of the brain has resulted in some secondary affection of the cord?

might not a Vaso motor paralysis have been so induced?
If such a view be granted it is not a great step to assume that a Secondary inflammation has been set up by the state of passive congestion already in existence. We cannot perhaps yet explain why the posterior columns should be so affected to the exclusion of other tracts of the cord but it is an incontrovertible fact that the posterior columns are by far the most frequently affected by sclerosis.

In the absence of a more probable theory I am therefore disposed to believe that these two cases are examples of posterior sclerosis resulting, more or less directly, from

Severe cerebral injuries and probably accounted for by a secondary paralytic congestion of the spinal cord.

On Gastric Crises

The patients to whom I now desire to refer are interesting particularly on account of the existence of Stomach irritability of a peculiar type –

Case I J. M. act. 40. Boilermaker. For about the last Six years patient has suffered from attacks of severe cramps in the abdomen.

These attacks are accompanied by intense pain, complete anorexia, great swelling of abdomen, rigid and hard condition of its walls, severe colic, expulsion of large quantities of flatus by mouth and rectum and the bringing up of clear fluid – Sometimes very little – from about a cupful to a pint or quantity; also but not so frequently the ejection of a quantity of yellowish material like yolk of egg; at other times attacks fluid as green as grass; to this resume may be added the existence of chronic obstinate constipation.

Immediately preceding these attacks patient always experienced severe abdominal pain. This was sometimes relieved by pressure and he was in the habit of keeping his hands pressed against his abdomen or leaning over the back of a chair. The pain was lessened at once whenever flatus escaped. The intensity of the pain must have been extreme. It often compelled him to cry out & wish for death and this is some noteworthy as he is a man of considerable resolution and intelligence.

The attacks recurred at intervals of about a week and were repeated several times during the day of this appearance. They never lasted long at a time. There was no set period of appearance as they came on most frequently — during the night, before going to bed. before breakfast &c. Patient says that they did not, as a rule,

occur after food but his wife is very positive that this is an error and she says they were more marked after eating and accompanied by swelling of the abdomen.

Was quite evident after thorough cross-examination of both patient and his wife that these attacks never lasted any considerable time - certainly never for a whole day - with a single exception about a fortnight ago. As a rule they yielded after some treatment in about quarter of an hour but not until the plates was expelled. They were not preceded by gradually increasing nausea but seem to have come on suddenly in the midst of perfect ease and whenever the plates and fluid were expelled he had relief at once.

In the past seven months vomiting of yellowish or greenish fluid has almost entirely disappeared; but the attacks of cramps have

been aggravated and accompanied by greater general pain and discomfort. He still however brings up the flatus and clear fluids and this is followed by relief.

It has been already remarked that patient is much pained and distressed by an abnormal hardness of the abdominal walls, aggravated by standing up. On examination the truth of this statement is confirmed for the abdominal walls are quite rigid like a board and greatly retracted. The muscles are seen to be in a state of powerful contraction. Those especially involved are the Recti in their whole extent and the Obliqui, especially in their upper parts. according to the amount of contraction two or three very hard cords are seen and felt raised from the general surface and extending transversely round the abdomen at a level rather above the umbilicus and at times the Recti

can be almost encircled in ones grasp and feel exactly like two thick iron rods. This condition is however intermittent - at other times, especially after prolonged gentle palpation the muscles relax and the walls become soft and pliable.

I have entered at some length into this case as being a most characteristic example of its class. This man exhibited the most complete evidence of Locomotor Ataxia.
Briefly his chief symptoms were - incoordination of upper and lower limbs with anaesthesia, a history of most severe lightning pains for many years, the ocular phenomena, loss of patellar reflex and an affection of the Knee joint to which I shall return

The gastric details are decidedly unusual. a most striking peculiarity is afforded by their Spasmodic nature. He felt sudden attacks of violent epigastric pain and was instantly compelled to empty his Stomach. They were unaccompanied by sickness. no preliminary nausea gave him warning of their approach. The material ejected consisted usually of fluid, tenacious in consistence and either clear or greenish in appearance. Be it also noted that these attacks were accompanied by the expulsion of a great quantity of flatus and hardness of the abdominal walls.

I have dwelt on these Symptoms because they are not only peculiar but thoroughly representative.

allow me to give another example.

Case II I. 2—. act 28 machinist.

a history which patient details of abdominal disorder is somewhat unusual. His attention was first attracted to derangement of his stomach about three years ago. Before that he had been in perfect health.

The principal symptoms were pain, vomiting, flatulence, constipation and rigidity of the abdominal walls. At the date already mentioned he began to experience, after dinner, a constant heavy pulling sensation over the epigastric region, "just as if the stomach were being pulled out." This was unaccompanied by the slightest sickness or nausea and

appetite remained triumphant triumphly good but this feeling was so oppressive that he frequently put his fingers to the back of his throat, induced vomiting and was then almost immediately relieved - after obtaining ease in this way he was able when evening came to enjoy his supper and this meal was never followed by unpleasant effects but he adds, with a laugh, that he always enjoyed his dinner best. These attacks were of almost daily occurrence - They always displayed a close connection with food and came on whatever care he took in avoiding various articles of diet.

Patient also describes what he calls a "wind pain" meaning by this flatulence, but flatulence of a peculiar type. This gave him great distress & was by far the most

urgent y his Complaints. Such attacks troubled him at intervals usually y about two days but occasionaly they remained entirely absent for as much as four. - no interval ever lasted as long as a week. He had far more pain "when the wind troubled him" than during the existence y the more usual y his gastric symptoms; nor was there the same intimate connection with taking food as they came on at all kind y odd times during the night as often as any day. Sometimes before breakfast, before going to bed or on rising early in the morning and so on; he could never count on them. They usually lasted about an hour or an hour and a half, then he brought up wind and was quite well again until the next meal. Sometimes he had two such attacks in one day but more frequently only one and for the next two, three, or four days, no return. When he ejected wind

there was seldom vomiting and, if vomiting, no wind - During their existence he was tormented by severe stabbing pains extending from the flanks round in front of his abdomen "like needles going into him" "like to make him cry" and these pains disappeared as the wind got away or "broken"
He has brought up clear fluid when flatulent but this was not a marked symptom and did not attract his attention much. He often felt "his bowels all rolling through him" but there was seldom much escape of flatus by the rectum - Constipation was also most obstinate and he had often no passage for a week -
He describes very graphically that the abdominal walls always became quite hard when he was troubled with flatulence "just like a board" and when asked to point to the situation of the hardness, he put

his hand over the whole extent of the Recti muscles saying it was there such a state of matter existed and adding that the flanks always remained soft. The abdomen itself always became greatly swollen. The pain already spreading upward to was exceedingly severe often causing him to cry out and much worse than that due to undigested food in his stomach. It was "an awful sharp kind of pain." He had often to hold on when something "struck that sore" - often he gave up his work to go home but on the way he would bring up several mouthfuls of wind and be quite well again.

His symptoms impressed with the conviction that the gastric and flatulent attacks were distinct from each other, although associated; and there seems to be some justification for this opinion. The gastric symptoms were of daily occurrence

and always appeared after food. The flatulent were divided by intervals of two three or four days and had no relation to food and the accompanying pain was of a heavy dull character in the first but in the flatulent uniformly of a heavy violent sudden spasmodic nature and very much more intense in degree; still there must have been a certain relationship between them as it may be observed that they originated and finally disappeared simultaneously. It may be added that in the intervals his health was very good and he always enjoyed his dinner although that meal was followed by such unpleasant consequences.

In its main features the history here detailed bears a close resemblance to that of J. M—. This patient

States most distinctly that during the intervals of the attacks he feels quite well. There is no pretending feeling of sickness. He always enjoyed his meals - Flatulence was again a marked feature and was accompanied by very great pain and as in the last case the attacks were associated with a rigid contraction of the abdominal walls.

I have not said much about the pain complained of but this was of a most intense description and invariably present during the attacks - It is referred to "as an awful sharp kind of pain" as if it could not be sever and often provoked its victims to cry out and wish for death.

It is most interesting to note the

wonderful uniformity of such unusual symptoms. I have at present under my care a female patient affected with Tabes, and who also presents another illustration of this gastric disorder. She confirms the spasmodic nature of its onset and denies that its advent is signalled by any feeling of nausea - after bringing up a great deal of glairy and green coloured fluid the attack passes off and she feels quite well again. The accompanying pain is however very severe and there is again that remarkable rigidity of the abdominal walls.

I may add that all these patients suffer from most obstinate constipation -

Let me describe another instance

Case IV J. R—. act 39.

He frequently vomited his food, had severe pain in the region of the stomach, was very constipated and suffered greatly from flatulence; stool became like pipeclay and very deficient in quantity.

Patient complains greatly of a "hardness of his belly" meaning by this that at times the abdominal walls become perfectly rigid like a board. This symptom varies greatly in intensity - at times it is very severe and gives rise to great pain coming on suddenly and lasting generally for about five hours, at other times it comes on more slowly and is less painful but more prolonged. He has suffered from this, more or less, since his illness began. These

conditions have always given rise to great distress - He often complains of the extreme severity of the pain and has become very much reduced in body and enfeebled mentally in consequence.

On examination by the hand the abdomen is at times felt to be quite rigid but this rigidity seems to be caused particularly by spasmodic contraction of the Recti muscles. When he stands the abdomen becomes very prominent and tympanitic on percussion - Pressure over the Surface causes increased pain.

For more than a year he has felt no desire to go to ~~stool~~ stool and when he has gone he would not know that he had passed any fæces unless he looked afterwards.

Patient also states that in defecating

there is a burning pain in the same situation which extends down to the rectum - He also complains of a pain which seems to "jerk up the fundament" - This is of a somewhat stabbing character, repeated many times a minute, lasting for an hour at a time and has troubled him for the last five or six months.

The same features crop up again and confirm the remarkable resemblance which is exhibited by these cases. This man, however, in addition is affected by a degree of rectal anaesthesia which has existed for about a year. This is by no means a rare manifestation of the disease and, no doubt, helps to account for the usual history of

Severe constipation. I have repeatedly observed it in cases under my care - as for instance the case of a man Macdonald act 49. He states very distinctly that since the origin of his illness, motions have occurred without the slightest recital or anal sensation and in fact he would not have been aware of the act of defecation without after inspection. This usually took place if he had undergone undue exhaustion or if he had been exposed to great cold.

This Symptom was very intermittent. It occurred first about five months after his illness commenced. It has not returned oftener than on about fifteen occasions and each attack lasted for one or two days at a time. It has never

been a permanent feature. During the existence of these attacks of anaesthesia he suffers from a feeling as if there were a belt about three inches broad encircling his abdomen at the level of the umbilicus and when the attacks pass off it likewise disappears.

Numerous examples of stomach troubles in this disease are related by various writers and the similarity of their descriptions is remarkable. Buzzard refers to one Patient who suffered from great pain in the stomach with much flatulence and retching and the expulsion of greenish stuff and food; of another case he says there is dreadful gurgling and belching of wind with flatulent

distension of abdomen and during the intervals she is quite well; of another she brings up a great deal of flatus and there is much empty retching; and again, much wind was expelled.

I need not say that the foregoing are illustrations of the gastric crises regarding which we owe so much to Charcot.

I have usually had under observation such exceedingly well marked examples of this remarkable symptom that it is difficult to imagine any great difficulty arising in regard to their diagnosis. The close resemblance of their clinical histories has always impressed itself on my attention. In no ordinary

affection of the digestive system do we meet with a similar uniformity.

The agonising pain with accompanying rigidity of the abdominal walls, the excessive flatulent distension, the expulsion of quantities of fluid, either clear or greenish in colour and the sudden onset and disappearance of the attacks are features sufficiently striking to arrest our attention leading to most careful inquiry and few diagnostic errors.

Their value in diagnosis is great. They frequently occur very early in the disease and ~~lead~~ suggest, to a search for symptoms which otherwise might not have attracted notice. I allude to such evidences as the condition of the Patellar tendon reflex, ocular phenomena and so on.

On the association of Gastric Crises & Affections of Joints

Charcot was the first observer who pointed out a remarkable association between Gastric crises and joint affections in individual patients. I am able to record one such instance.

This man presented most undoubted evidence of Tabes. The Gastric phenomena already referred to on Page 63 had been in existence for nearly five years when his left knee first became affected.

Mr Hector Cameron was kind enough to examine the joint. The interesting points in his report are briefly - the existence of myelo plating, the abnormally free movement and the degree and character of the swelling. The crepitation was remarkable - resembling very much the sensation

Conveyed to the hand in a case of advanced chronic rheumatic arthritis. The movement was very free in every direction giving abundant evidence of ligamentous disorganisation.
The shape of the swelling was peculiar extending much further up the thigh than is common in a case of hydrops articuli and this was most marked on the inner aspect of the limb.

The history was even more interesting than the condition of the joint itself. Its onset had been entirely unprovoked. He had never received any injury on the limb. It commenced gradually and was absolutely free from the signs of inflammation - pain, heat, redness, swelling - Patient himself says " it never festered or nothing,

just always swelled" and that "it was always very cold". An extraordinary circumstance is that with such an advanced state of disorganisation patient has never experienced any difficulty in flexing the limb and has always been able to bear all his weight on it and walk about.

Finis

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