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Glasgow

1888

Proposed for J. Granger M.D.

(Read by Prof. Greenfield)

I should rather incline to print this to pass
M.D.

SYPHILITIC

MENINGO-MYELITIS.

Myxoma, but I think, entitled to S

By

George Scott MacGregor. M.B. C.M.

Edinburgh University.





4th June 1894.

Dear Sir, I beg to enclose
thesis by G. S. MacGregor
on "Syphilitic Meningo-
myelitis", which has been
already read by Professor
Greenfield, and which has
been referred to you for
further consideration.

Yours truly,

John Burton

lectr med. Fac.

Professor Sir J. Grainger Stewart
19 Charlotte Square

Syphilitic - Meningo - Myelitis.

In bringing the following cases before the notice of the medical profession, I should state that while acting as clinical medical tutor in the Glasgow Royal Infirmary, my attention was drawn to the peculiar nervous symptoms exhibited by a patient called James H-, whose case I will relate subsequently.

This patient was admitted on May 17th. 1891, suffering from pains in his joints, in small of back, tingling and loss of sensation in left arm, and also to some extent in right arm.

The next case was that of a woman Mrs. O-, admitted to the Glasgow Royal Infirmary on April 3rd. 1894. This case was published by me in the British Medical Journal - March 2nd. 1895,- under the title of "Syphilis, a factor in the aetiology of acute ataxic paraplegia." This drew the attention of Mr. Jonathan Hutchinson, who very kindly forwarded for my perusal the literature bearing upon the subject of Syphilitic Meningo-Myelitis, to whom my sincere thanks are due.

The third case was that of a servant girl, admitted to the Glasgow Royal Infirmary, February 25th 1895, and whose condition I was readily able to diagnose. I followed the case with great interest, with the ultimate hope of seeing the post-mortem, and having my diagnosis verified; but, unfortunately the friends insisted on the patient's removal home to the country, and my plans were frustrated, however, I wrote her relations sometime after her departure from the Hospital, and received the information that she gradually got worse, and died on the 16th. of June 1895.

I shall, therefore, relate the cases as I have them in my notes.

James H-, Baker, aet 48, admitted to the Glasgow Royal Infirmary, May 7th. 1891. Complaining of pain in all his joints, and in small of back, also tingling and loss of sensation in left arm, and to some extent in the right arm. Present illness began somewhat gradually eighteen months ago, with pains in left elbow and shoulder joints. Since these pains

began they have been more or less constant, and occasionally of great intensity. Since Christmas of 1890, the pains have become more severe, and for the last four months patient has been off work. Along with increase of severity of the pains patient has noticed that he has been unable to close his hands, and he thinks that his fingers have become a little swollen, more so in left hand than in right; along with this loss of power there has been a loss of sensation and a tingling in left hand and arm. These symptoms are to a less degree noticeable in right arm and hand. The pains are worse at night. Patient has been attending the Eye Infirmary owing to "weakness of his eyes," but does not know the name of the disease.

He has always been a very healthy man, had erysipelas fourteen years ago, hard chancre when a young man. Father and Mother lived to an old age, brothers and sister alive and healthy. Patient looks well nourished. There is no swelling of any of the joints, no pain on pressure. The other systems are normal. Bowels are very costive, urine S.G.

1032, urates in abundance, no albumen.

June 1st. 1891.

Pain in the joints has entirely disappeared, but lightning pains of great severity have appeared in the legs. The tingling sensation is still present in the hands. Patient could walk on admission, but now he has completely lost the motor power of his limbs, can't even stand, nor move himself in bed.

/es Patellar reflex_^ quite absent. Suffers from retention of urine, and great constipation.

June 19th. 1891.

Patient suddenly began to get very breathless, face pale and anxious, and looks extremely feeble. Cries out now and again with the severity of the pains, located in the arms, especially the left one. Left hand extremely cold and grasp completely absent. Right hand can grasp, and warm to touch. Pulse very feeble and thready. Complains of a deadness all over his body, but feels pain on pricking him with a pin. Died at 7.30 p.m.

Post-mortem Examination:-

Fairly-well nourished body, with a slight

tendency to subcutaneous dropsy of the back and lower extremities. On the left hip and on the left side of the thorax are superficial bedsores.

After removing the arches of the vertebræ, the posterior surface of the spinal dura mater presents a normal appearance, but its anterior surface is firmly adherent to the osseous surface; this is particularly the case in the lower cervical and in the lumbar regions. On removing the cord and exposing its posterior surface, an area of intense hyperæmia from two to three inches in extent is discovered in the soft membranes immediately above the lumbar enlargement. On examining the anterior surface of the cord, a most striking area of softening in the middle dorsal region is exposed. This area is about two inches in length, is of an opaque white colour, and by its swelling has caused a considerable increase in the thickness of the cord where it is situated. It practically involves the whole thickness of the cord; and on more careful examination it can be seen posteriorly. In this region the tissue of the cord is of the consistence of thick cream. At several points below

this main area of softening the spinal tissue is much softer than normal. It should have been mentioned that the dura mater in front of the upper part of the cauda equina is thickened and very adherent.

The cranial dura mater presents nothing very remarkable, but the soft membranes covering the vertex are very distinctly opaque and highly oedematous. Examination of the base of the brain reveals on the whole healthy characters and no exudation is in the least visible. The vessels are healthy. On cutting into the lateral ventricles they are found to be distended with a reddish coloured serum, their walls, however, are not markedly softened and the cerebral tissue generally presents healthy characters. Heart normal, external fat somewhat increased in amount. Right lung is universally adherent by old adhesions, at its apex a considerable amount of cretaceous matter is present. Left lung normal. Spleen and liver both normal. Kidneys are very distinctly congested. On opening into the urinary bladder, the mucous membrane presents a normal appearance.

Résumé of the Post-mortem:-

Softening of the spinal cord; Pachymeningitis chronica spinalis; acute hyperaemia of soft membranes of cord; dropsy of lateral ventricles of brain; œdema of soft cerebral membranes of vertex.

Microscopical Examination of the softened and enlarged area in the spinal cord:- one finds isolated fragments of the nerve fibres, droplets of myeline and occasional compound granular corpuscles.

Case II

Mrs. O-, aet 42, was admitted to the Glasgow Royal Infirmary on April 3rd. 1894, complaining of inability to sit up or move her lower limbs. She stated that on March 30th. 1894, she was in the enjoyment of her usual health, and that while sitting mending shirts during the middle of the day she was suddenly seized with a feeling of numbness in her lower extremities. She, nevertheless, was able to get up and go into another room for mustard oil, with which she rubbed her limbs. This was followed immediately by considerable relief to her symptoms. On

resuming her work she was again suddenly made aware of a peculiar pricking sensation and numbness creeping over her lower limbs, accompanied by pain and weakness in the small of the back. She now for the first time discovered that she was quite unable to move her lower limbs, and had to be lifted into bed.

On admission four days later she presented the following signs and symptoms:- Her face wore an anxious expression, while her complexion was of a somewhat sallow colour. There were marked nervous twitchings of the face, more especially the eyelids, and restless movements of the arms. At the same time she had no severe pain, with the exception of a slight twinge about the small of the back, which shot round towards the bottom of the abdomen. The pulse rate was 140 per minute, while the temperature was 102°F. There was loss of control of both sphincters, also loss of motor power of the lower limbs, while sensation in the affected parts was normal. There was complete absence of the knee-jerk, nor was ankle clonus present. There was no cramp in the legs, no anaesthesia, no analgesia. She could quite readily

localize tactile impressions; any girdle pain was very slight; the sponge test was negative; there was no flaccidity nor atrophy of the muscles of the lower limbs. There was evidently some vaso-motor disturbance present, as was seen by the marked ecchymosis on both heels. It may be added that meanwhile her temperature was sometimes reaching as high as 104°F., with respirations occasionally 50 per minute, and a pulse rate of 150 per minute, while occasionally a hectic flush might be seen on both cheeks. The tongue was rather glazed and dry. Physical examination of the chest revealed nothing of a special character; there were only some loud sonorous râles heard over both lungs at various points.

From April 3rd., the date of her admission to the hospital, the above symptoms and signs remained virtually unaltered until April 10th. when she suddenly presented a marked change. The still more frequent respirations, the commencing irregularity of the heart beat, and the falling temperature, all betokened an increasing exhaustion. She soon passed into a state of complete unconsciousness, and gradual-

ly sinking, died on the morning of April 13th. It need only be added that the temperature continued to fall steadily from April 10th. until within four hours of her death, when it registered 96.2°F. The urine was found to present the following characters:- reaction alkaline, ammoniacal odour; mucus, pus, and albumen present.

The result of the post-mortem examination was as follows:- The body was that of a well-developed woman, not much emaciated. On laying open the spinal canal, the dura mater presented quite a healthy appearance, but on reflecting this, the soft membranes were found to be unusually adherent to it, and likewise to the cord beneath, and they were also seen to be infiltrated with a white fibrinous deposit confined, however, to the lower dorsal portion of the cord. There did not appear to be much increase of vascularity, and the cord appeared quite natural in density and colour. It was put in Müller's fluid for further microscopical examination. The heart and lungs presented quite healthy appearances, except that the heart had a much greater amount of fat on it

than was usual. The liver had several nodules in connection with its capsule, both on its upper and lower aspect, having the appearance of cicatrices, and on section these presented all the characters of syphilitic gummata, and on subsequent examination under the microscope proved to be undoubted gummata. The spleen and intestines presented healthy appearances. The mucous membrane of the bladder was very vascular and thickened, the ureters were slightly distended, but did not appear inflamed, and contained nothing abnormal. The pelvis of the left kidney was also somewhat dilated, and its mucous membrane appeared very vascular. The cortices of the kidney appeared somewhat atrophied, but pale, and evidently had been the seat of a parenchymatous nephritis; the capsule was adherent and left a roughened surface on being detached.

On July 6th. 1894, I examined sections of the spinal cord; it had previously been embedded in celloidin, cut and stained with carmine. Under the H.P. of the microscope, sections of the cord at the level

of the lower portion of the dorsal region presented the following characters:- The vessels of the cord were large and injected with numerous small red corpuscles, the soft membranes surrounding the cord showed a fibrinous infiltration; the sections otherwise presented a perfectly normal appearance. A section from the cervical portion of the cord, showed normal characteristics, the vessels were neither enlarged nor injected.

Case III

Jane A-, servant, aet 36, admitted to the Glasgow Royal Infirmary, February 25th. 1895. Complaining of loss of power in both legs, of six days duration. Up to last July she was quite healthy. About that time she contracted a sore, which was followed in about a month by a rash over her whole body. She also had a sore throat and was troubled with her hair falling out. She had a severe pain in the head at that time. Her parents are both alive; there were eleven of a family, of whom two are dead, one from croup, the other from whooping cough. On Tuesday, February 12th., she had a difficulty in passing

her water, only passing a small quantity. On Wednesday she required to get it drawn off. On Thursday, while sitting in her chair at home she felt a severe pain in her back and in the lower part of her abdomen; she describes it as being like "flashes of fire." On rising she experienced great difficulty in walking to her bed, owing to the loss of power in her legs. The pain did not radiate to her arms and legs, but passed away in about twelve hours. Next morning she found that she was quite unable to move her legs. Since then she has not been able to pass any urine voluntary, and has lost control of her bowels. There is no history of any injury nor alcoholism.

Patient is a well-developed woman; a large discoloured circular patch is present above the right eye-brow; a circular healing ulcer is present on outer side of right ankle, and some bullae are present on toes of right foot. An abraded surface is seen on each hip. No defect of any cranial nerve is apparent. On tapping along the spine, slight pain is complained of over the lumbar region of the spine. Tactile, thermal and painful sensations are all absent in both legs, up to and about the level of the

anterior superior spines of the ilia. Knee-jerk absent, no ankle clonus, plantar reflex present in right foot, abdominal and epigastric reflexes are absent. The glands in the groin are enlarged, and pustules are present on her back. She is able to draw in her abdominal muscles, but they do not seem to retain full power. Dynamometer R.24 L.32. Chest broad and well formed, movements good. Percussion and auscultation reveal nothing abnormal. Apex beat in normal situation, cardiac dulness normal, pulse 100, regular, compressible, heart sounds pure. Tongue slightly furred, appetite good, bowels confined, temperature 99.6°F. Urine acid reaction, S.G. 1032, urates present, no albumen.

February 27th. 1895: Tactile sensations slightly present in both legs, thermal absent in both legs, painful impressions absent in both, a cord-like feeling is present at the lumbar region, running round to the umbilicus, the sensibility is good at the umbilical level. She cannot move her legs nor her toes in the slightest degree.

March 3rd. 1895: Does not feel the nurse passing the catheter. On March 1st. she felt the catheter being

passed, has not, however, felt it since. She says that she can appreciate touch as low down as fold of groin. Since March 1st. a troublesome cough has started, and the pain which was a prominent symptom in the back and abdomen has now abated.

March 6th. 1895: Sensation to pain, heat and cold, likewise tactile sensation is slightly present in both legs. No knee-jerk, plantar reflexes both active, no power of voluntary movement.

March 14th. 1895: Can move the great toes of both feet, and slight sensation is still present in both legs.

April 25th. 1895: No voluntary movement when right leg is pinched; states that she feels it in her left. Sensation to cold is not felt, but on applying heat patient feels it only in the left leg, this leg is slightly drawn up shortly after the hot test tube has been applied. Power of bladder and bowel still in abeyance, urine contains pus, limbs are very cold, muscles soft and flabby, bedsores on right hip, has a feeling of pins and needles in her legs.

May 1st. 1895: Her friends removed the patient to

her home in the country. A few months later I wrote the father of the patient, and he replied that his daughter gradually got worse until finally she died on the 16th. of June 1895. While in the Hospital she was put on large doses of mercury and iodide of potassium.

In the three cases just narrated, I should like to show that they go far to prove that syphilitic meningo-myelitis occurs during the tertiary period, as shown in cases I and II, as well as during the secondary period, as detailed in case III, likewise, that its course may be of a rapidly fatal character, as seen in case II, or of a somewhat slower nature, as seen in cases I and III.

Its starting point, viz: the soft membranes in the sub-arachnoid space, as was seen in case II; with involvement and congestion of the blood vessels in their immediate vicinity, and likewise passing into the cord.

Most authorities are agreed that following the inoculation of syphilis, the period of onset of syphilitic meningo-myelitis may vary from six months

to twenty years. Charcot, at a clinic in the Saltpêtrière, showed two cases of syphilitic meningo-myelitis, one occurring sixteen years after infection, the other five years after the primary sore. Lamy reports two cases where the nervous symptoms appeared one year after the manifestation of the primary sore. In the same paper, a case under the care of M. Brissaud is recorded, where the nervous symptoms did not show themselves until eight years subsequent to the primary sore.

The evidence of our own writers and observers concurs in the indefiniteness of the period of onset. Ferrier, at a meeting of the Royal Medical and Chirurgical Society in March 1895, quotes a case of acute paraplegia occurring six months after infection, while Gowers, Hutchinson, and others give analogous cases, period of onset varying from one to eight years.

In the cases where paraplegia or other nervous symptoms arise, during the secondary stage of syphilis, the diagnosis is a matter of no difficulty,

¹ Lamy - Nouvelle Iconographie de la Saltpêtrière.

but on the other hand, syphilitic meningo-myelitis may and does occur many years after the primary affection, as was seen in case I, where the primary sore was contracted while the patient was still a youth, and again in case II, where gummata was most conclusively demonstrated at the post-mortem in the liver of the patient.

It is in cases such as the preceding; where following the lapse of years; patients have preferred to keep in the background early indiscretions, that diagnosis becomes a matter of some difficulty. Therefore, I would strongly be of opinion, in a case of sudden paraplegia or obscure nervous symptoms, - where no definite cause could be assigned - that we had to deal with a meningo-myelitis of a specific origin, rather than a sudden hæmorrhage into the cord.

'Heubner pointed out the predilection of the syphilitic neoformation for the periphery of the cord, especially the soft envelopes of the cord in the sub-arachnoid space.

'Heubner "Article on Syphilis of the cord in Ziemssen's handbook."

'Grieff pointed out the co-existence of spinal meningitis, arachnitis, and lepto-meningitis, with lesions of the blood vessels which run at the surface of the cord, and admits the intimate relation between the meningitis of one part, and the arteritis and phlebitis of another part.

"Gilbert and Lion admit that the diffused embryonic meningo-myelitis probably characterises the initial state of the medullary syphilitic productions. These authors describe in detail this form of anatomical lesion. Here the alterations are not frequently appreciable to the naked eye. The microscopical lesions are represented by a luxuriant proliferation of young cells that occupy more particularly the pia mater and its prolongations, principally conglomerated around the vessels; they penetrate the vascular tunics themselves and disassociate them. The lumen of the vessels is just a slit, sometimes it is completely obliterated. " Siemerling reports a case of

'Grieff - "Ueber Ruchenmark Syphilis" 1882.

"Gilbert and Lion" - "De la Syphilis Médullaire précoce" 1889.

"Siemerling - "Zur Syphilis des centralnerven systems" 1891.

into the cord

medullary syphilis in a woman of 47 years, who suddenly developed a paraplegia, proving fatal in less than a month. The medullary lesions to the naked eye were not marked, but the microscope revealed the existence of a focus of meningo-myelitis in the inferior dorsal region, a microscopical gummatous focus emanating from the pia mater, and advancing in the form of a coin into the cord. There existed at this level some important lesions in the anterior spinal vessels, the vein was entirely obliterated, the artery alone presented an embryonic infiltration of the tunica adventitia.

'Rumpf in his conclusions on the vascular phenomena in the cord from syphilis, states that he verified at the level of a focus occupying the dorsal region of the cord, an intense inflammation of the arteries and veins, that they were almost completely obstructed, and in which the walls were infiltrated with numerous cellular elements.

' Rumpf - "Ueber Gehirn und Ruck."

Lamy reports a case of a man who contracted a chancre one year previous to his admission to the hospital, suffering from paraplegia; patient died nineteen days after the development of the paraplegia. In the autopsy he states that to the naked eye there was almost complete integrity of the cord and its meninges, but on microscopical examination a diffuse gummatous arachnitis and lepto-meningitis in all its extent, evident predominance of infiltration at the periphery of the vessels, nodular formation around the capillaries, gummatous phlebitis, peri-endo phlebitis obliterans, and almost complete integrity of the spinal arteries.

The autopsy of case II, as recorded by me, showed on examination of the spinal canal that the dura mater of the cord, to the naked eye, presented a perfectly healthy appearance, but on reflecting this, the soft membranes were found to be unusually adherent to it and likewise to the cord beneath, and in the dorsal portion of the cord there was an infiltration of a white fibrinous deposit. There did not appear

to be much increase of vascularity, and the cord appeared quite natural in density and colour. On microscopical examination, the sections of the cord in the dorsal region showed the vessels ^{to be} ~~in the cord~~ ~~were~~ large and injected with numerous small red corpuscles. The soft membranes surrounding the cord showed a fibrinous infiltration, otherwise the sections presented a perfectly normal appearance. A section from the cord at the cervical level, I likewise, examined microscopically, but it presented no abnormal characteristics, the blood-vessels were not injected. We have here, I consider, the starting point of an embryonic infiltration, the initial stage as it were, of the medullary syphilitic neoformations, and a further proof that the meningo-myelitis is a disease propagated by the blood vessels contiguous and in direct contact with the soft membranes affected. An arteritis results followed by a periarteritis, with a somewhat homogeneous exudation around the capillaries and smaller arteries. This undoubtedly is the precursor of the formation of gummatous nodules. A phlebitis occurs in the vessels

around which this homogeneous infiltration spreads, with the result that after a time it breaks down, and what was once normal nerve fibres and cells now consists of a detritus mass of a creamy consistence. Or again, this homogeneous infiltration may get a vascular supply from its periphery or capsule, and remain a nodular mass.

In the case I have first recorded, we have on post-mortem examination of the spinal canal the following appearances:- The posterior surface of the dura mater is of a normal character, but its anterior surface is firmly adherent to the osseous surface of the bodies of the vertebrae, particularly in the lower cervical and lumbar regions, while an area of intense hyperæmia, from two to three inches in extent, is discovered in the soft membranes immediately above the lumbar enlargement. Again, an area of softening is seen in the anterior surface of the cord in the middle dorsal region, two inches in length and of an opaque white colour. In this region the tissue of the cord is of the consistence of thick cream. At several points below this main area of softening the spinal tissue is much softer than usual. I might

add that the dura mater in front of the upper part of the cauda equina, is thickened and very adherent.

The microscopical examination is, I regret to say, deficient, as I only examined the softened area and there found the following changes:- A mass of detritus in which isolated fragments of nerve fibres, droplets of myeline, and occasional compound granular corpuscles were seen to represent what had once been normal spinal tissue.

Between the earliest development, viz:- Hyperæmia of the soft membranes, and the later syphilitic productions, there may be many pathological transitions through which this disease passes. It is not my intention in this paper to touch upon the various theories, but merely to present to you the result of my own investigations of these cases as I have them in my notes.

In the third case that I have recorded, I regret that circumstances prevented me from obtaining a post-mortem, but from the patient's history and symptoms one is perfectly justified in coming to the conclusion that the appearances of the cord would pro-

bably be like that of case II, only a stage further advanced; also that we would have the arteries in the cord much more injected, while the arterioles and capillaries would be blocked, and the homogeneous exudation would be well-marked. Time would not have allowed the syphilitic formations to have taken place, therefore the diagnosis of a paraplegia due to pressure would be out of the question; but we would suppose that it was due to the virulence of the toxic products paralyzing the vitality of the nerve fibres and cells.

What should be done in such circumstances; and what is the probable issue of such a case, are questions which obtrude themselves on one's mind, such indeed was the condition of my own state of mind following the result of my ~~own~~ investigations of ~~my~~ ^{the} two first cases. Taking syphilis as my most important factor in these acute paraplegias, I resolved to use active anti-syphilitic treatment in any case that presented itself to me in the future. I shall, accordingly, quote notes of a case which came under my care in my private practice on November 18th. 1894.

J.M., a schoolboy, aet 12 years, suffering from ataxia of the lower limbs, which had come on quite suddenly two days previously. The patient for three months had suffered from severe and persistent headaches, and on tapping him sharply over the right frontal region he complained of pain. He is a quick intelligent lad, and answered my questions with much clearness. Eyesight normal, temper irritable and changeable, complains of a slight feeling of pain in the small of the back, no girdle sensation, and on percussing the spine nothing abnormal could be detected, neither was there any increase of pain over the region complained of. Knee-jerk increased, the ataxia was most pronounced, and the boy could not walk without support. Sleeps fairly well; urine dribbles away involuntarily; bowels very constipated; pulse and temperature normal; tongue clean; teeth typically peg-topped. As I could obtain no knowledge of a specific taint from the parents, I, accordingly, adopted anti-syphilitic remedies, putting him on Hydrangyri Perchloridi and Potassae Iodidi with mercurial inunctions. Continuing my notes, I find that the urine ceased to dribble a few days after the commencement of this treatment, and at

the end of fourteen days the boy was able to walk across the room unaided. Three months afterwards the boy was perfectly strong, his headaches having entirely disappeared, and up to the present he is well and healthy. Charcot related similar results following the exhibition of mercury. Lamy, likewise, relates similar cases, where the nervous symptoms yielded to the mercurial treatment.

We must be very guarded, however, in our prognosis of any case, as the happy results are somewhat rare, but still recovery is possible in some cases, therefore our duty is to treat every case on the strictest anti-syphilitic lines.

Appendix to Syphilitic Meningo-Myelitis.

Since writing the following cases, my attention was drawn to a paper in the British Medical Journal by Professor McCall Anderson, in which he cites a most remarkable case of recovery from paraplegia by the use of anti-syphilitic remedies.

- ' McCall Anderson. "Illustrations of the less common forms of syphilitic disease."
British Medical Journal.
September 12th.1896.