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Historical Review

The earliest case of cauda equina syndrome caused by manipulation of the lumbar spine under a general anaesthetic

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Jonathan Hutchinson described a 42-year-old man with a previous history of alternating sciatica who had crushing of a pile under ether anaesthesia in 1889. When the patient awoke from the anaesthetic he had paralysis of his bladder and bowels. Jonathan Hutchinson could not establish a diagnosis. Evidence is presented to suggest that this was the first case of a prolapsed disc causing a cauda equina lesion as a result of anaesthesia and manipulation.
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Introduction

There has been considerable interest in spinal injuries which have arisen as a result of anaesthesia and chiropractor manipulations.[1–3]

I have identified a case described by Jonathan Hutchinson (1828–1913) in 1889 who was not only a distinguished Dermatologist and Surgeon, best known for his eponymous description of Hutchinson's teeth in congenital syphilis, but also an important neurologist, contributing particularly to the field of spinal injuries.

Hutchinson was surgeon to the London Hospital where there was a great neurological tradition. James Parkinson (1755–1828), who gave the first description of Parkinson's disease, was a student there. Sir Victor Alexander Haden Horsley (1857–1916). Henry Head (1861–1940) and George Riddoch (1888–1947) all practised neurology at the London Hospital.

In a little known paper Hutchinson (1866)[4] gave a series of accounts of the clinical manifestations, treatment and pathological findings of a series of patients with spinal injuries. Many patients survived and left the hospital ambulant, having sustained severe injury of the spinal cord. These patients were treated with intermittent catheterisation. Hutchinson stated categorically that injury to the spinal cord was due to direct trauma at the time of injury and not due to haematoma compressing the cord. He reiterated the views of Bell on the dangers of carrying out a laminectomy, recorded the dangers of pressure sores and recommended the use of a waterbed to prevent them. His views are modern and he draws attention to how badly patients are examined and how one should be sceptical of clinical observations, which has a modern resonance:

> 'Another source of fallacy is the difficulty of accurate observations. A man tells you "I cannot move my legs" and you are unable to prove the contrary, though it is still possible that a very vigorous exertion of will might be able to set certain muscles in action; in other words, that voluntary motion, although seemingly in abeyance, is not absolutely lost. The same patient tells you that he "can feel well" yet very probably, if you try accurate tests, such as the compasses or drawing a feather over the surface, you will find that his sensory function is very far from perfect. On account of our frequent neglect of such tests, we are compelled to receive with much qualification, recorded statements as to "perfect sensation" being retained after these accidents.'

The only reference to this work is by Silver and Henderson.[5] Hutchinson's contribution to spinal injuries is not mentioned in modern reviews of the subject.[6–9]

Hutchinson was recognised as a neurologist since he delivered a Presidential address at the Neurological Society on January 28th 1889.[10]

The case history

Hutchinson described the case of a 42-year-old man who was operated on for piles under a general anaesthetic of ether. A crushing clamp was applied and the pile was cut off with scissors. Post operatively he had retention of urine and had to be catheterised at midnight. Subsequently, the surgeon in attendance had

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to catheterise him three times a day. He had no pain and could not appreciate the passage of a catheter. He was constipated immediately post operatively and on the third day after the operation he was faecally incontinent without any feeling.

He was seen by Mr Hutchinson 6 months later when examination showed the anus to be patulous and acontractile. There was no contraction of his lower bowel and an enema had to be used or he had to be manually evacuated. He was unaware of the passage of faeces. When he catheterised himself three times a day, he had no sensation on passage of the catheter. The only way he could empty his bladder was by straining. He had partial anaesthesia around the anus and buttocks.

He had no problems with his bladder or bowels prior to the operation but he did have a previous history of alternating sciatica on both sides which was not very common and during the attacks of sciatica he felt numb on the buttocks. There is no record of the state of the muscles of his lower limbs.

Hutchinson diagnosed a form of ascending neuritis initiated by crushing of his pile but he was unhappy with this since there was no interval between the operation and the development of retention.

Discussion

There is no further information. No operation was performed and X-rays were not described until 1895. Anatomically he had a lesion of the cauda equina. In retrospect the most likely diagnosis is that he had a large lumbo-sacral central disc which was impinging on the cauda equina and, under the anaesthetic and the manipulations attendant on crushing the pile, the disc prolapsed and caused a cauda equina lesion.

The features to substantiate this diagnosis are a previous history of alternating sciatica accompanied by anaesthesia around the anus and the profound bladder and bowel involvement following an anaesthetic. Against it is the observation that there was no history of back pain at any stage but this is not unusual and is well recognised.[11]

The clinical features of cauda equina syndrome caused by disc prolapse were summarised by Jennett.[12] Sphincter involvement was common in half the cases. There was a history of repeated attacks of backache and sciatica for many years. In two cases the sciatic pain had been bilateral and in two others it had alternated between the two sides.

Bilateral symptoms and signs commonly preceded serious compression and indicated its imminence, and could well be precipitated by sudden movement.

The onset of compression was sudden in 12 cases. In other cases the paralysis came on whilst the patient was resting in bed. One patient developed paralysis during a game of cricket, another gave a violent cough whilst in bed with sciatica and was immediately aware of numbness and paralysis of both legs and had sphincter paralysis, whilst the third patient had a profound cauda equina paralysis immediately after manipulation of the back for long-standing sciatica.

It can thus be seen that a cauda equina lesion can be precipitated by quite minor trauma or manipulation such as was experienced in this patient.

There is a large literature of spinal cord injuries following trivial manipulation of the spine either by a chiropractor or incidentally.[13–19]

Dandy[13] described a patient who had bilateral pain down both thighs. Initially he was treated conservatively. He then had an ether anaesthetic and woke up with a cauda equina lesion.

Fisher (1943)[14] and Richard (1967)[15] both reported cases of cauda equina lesion following manipulation of the spine by a chiropractor in which the diagnosis was confirmed by laminectomy.

In this case the pathology is unknown. The patient had a previous history of alternating sciatica and when he woke up from the anaesthetic, he had profound bladder and bowel involvement with anaesthesia around the anus. On the balance of probability, this was not a coincidence but follows a similar pattern to those described. When the patient has an anaesthetic, manipulation takes place to position the patient. The muscles are relaxed. I personally know of two patients who have had anaesthetics to have a baby delivered and have woken up with a cauda equina lesion. In these cases the diagnosis was substantiated by myelography and at laminectomy.

Since Jennett's work the diagnosis of cauda equina lesion has become more stringent, ie injury to the lumbosacral nerve roots within the neural canal resulting in areflexic bladder, bowel and lower limbs. Hutchinson's patient had an alternating sciatica, a double sphincter paralysis and anaesthesia around the anus and would fulfill these criteria. Clearly the syndrome can be caused by other conditions such as ossification of the posterior longitudinal ligament, spondylosis deformans or spondylolisthesis.

Conclusion

There are no radiological, post mortem findings or operative findings to substantiate the diagnosis, but from the clinical features and mode of production, Hutchinson's case would appear to be the first case of cauda equina lesion caused by manipulation and anaesthesia in the literature.

We are fortunate that Hutchinson made such acute observations which, even today, enable one to postulate on the possible mechanism of injury.

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