

The Origin of Miller Fisher Syndrome

In the original description,¹ this clinical syndrome consisted of the development of external and internal ophthalmoplegia, cerebellar ataxia in the arms and legs and absence of the tendon reflexes, over a period of four or five days. The rather acute onset of such ocular signs associated with cerebellar ataxia was apt to be alarming to a neurologist in 1955, the year the principal case was studied. The patient developed severe ataxia of gait and diplopia in 24 hours. After four days there was complete external and internal ophthalmoplegia, ataxia that precluded feeding himself and made it impossible to stand or walk unaided. On examination, along with other findings, the tendon reflexes were absent. The patient's mind was clear. The several diagnoses that came to mind included vertebral-basilar thrombosis with a stroke, Wernicke's disease, botulism, multiple sclerosis and the Guillain-Barré syndrome. The cerebrospinal fluid (CSF) contained a few lymphocytes and a normal protein.

Dr David Cogan, a world figure in neuro-ophthalmology, was asked to see the patient in consultation and strongly recommended vertebral-basilar angiography. This became the focus of debate among several consultants. At that time, the procedure was carried out by means of a direct 'stick' with a needle that passed through the common carotid artery in the neck to reach the vertebral artery. I knew of several instances in which serious complications had occurred, including death. Our patient was not generally ill and subjecting him to angiography seemed too risky. Also I vaguely recalled seeing or hearing of a somewhat similar case in Montreal in the past few years, that had recovered. The discussion was continuing when on hospital day 5, spontaneous recovery began without special therapy. In ten days improvement was remarkable. The CSF was re-examined on the 30th day and contained 348mg protein per 100ml. This swung the final diagnosis toward acute polyneuritis of the Guillain-Barré type.

It has been my custom since the days of neurological residency to keep a list of every patient examined. The cases are then sorted out according to broad categories of diagnosis – stroke, multiple sclerosis, tumour, parkinsonism etc and the largest group by far, undiagnosed.

As soon as convenient I travelled to Montreal with the undiagnosed list. In short order two cases were found, both examined in 1953. The first was examined in consultation during the acute stage of the neurological illness that had followed acute pneumonia. In a period of three days the patient developed an internal and external ophthalmoplegia absent tendon reflexes and a wide-based ataxic gait. He had pins and needles in the tips of the fingers but sensation was normal in the fingers and toes. The CSF protein was 35mg per 100ml in the acute stage of the illness and was unchanged after six weeks. The second test had been performed when investigating the possibility of Guillain-Barré polyneuropathy. Neurological recovery was slow. One month later ocular paralysis was severe. The knee and ankle jerks had returned. One year later eye movements were full. This was the case I vaguely recalled at the time of the Boston case. It clearly fit the syndrome.

The second Montreal case was seen neurologically four years after the acute illness. He recounted the story and the original record was examined at the Royal Victoria Hospital. The patient had been seen in consultation by Dr Arthur Young, a former colleague, who recorded in his examination that the eyes were fixed in mid-position with absolutely no movement. The tendon reflexes were absent. There was no paralysis or weakness but marked incoordination of all extremities was present. This was thought to be cerebellar in type. There was no sensory impairment. Ocular movements began to return in one week but in two weeks impairment

was still severe. Walking improved and in five weeks he could walk in a straight line with eyes closed. In seven weeks recovery was full. The CSF was not examined.

It was quite likely that a fairly definite syndrome had been identified. The main consideration in reporting it, was to reveal an alarming neurological illness as benign and in no need of vertebral angiography. The prevention of ill-advised intervention was paramount.

A review of the literature revealed reports of several cases of acute Guillain-Barré polyneuropathy in which total ophthalmoplegia had accompanied paralysis of all four limbs. Also Collier² in 1932 recognised two types of clinical picture in Guillain-Barré polyneuropathy: paralysis of all four limbs with facial diplegia and paralysis of all four limbs with bilateral external ophthalmoplegia. In some of the latter cases, eye movements were severely affected and the limbs only slightly, with perhaps some extensor weakness and jerklessness. It was not appreciated at the time that a cerebellar-like ataxia of the limbs as a result of polyneuropathy was well known to French neurologists.³ It was attributed to involvement of the proprioceptive fibers. This could explain the absence of ataxia of speech.

It can be said with complete verity that the idea of having the author's name become eponymic did not enter this author's mind ever, even slightly. In July 1957, there appeared a report of two cases by J Lawton Smith and Frank B Walsh from the Wilmer Ophthalmological Institutes of the Johns Hopkins University and Hospital, Baltimore. Both cases conformed to the original syndrome and the CSF protein was abnormally elevated. The title of their paper was – Syndrome of external ophthalmoplegia, ataxia and areflexia (Fisher). Dr Smith had been a resident in Neuro-ophthalmology with Dr David Cogan at The Massachusetts Eye and Ear Infirmary at about the time our original case was hospitalized and may have seen the case. The authors pointed out that in addition to the three main signs, there may be added facial weakness and paresthesias of various parts usually without discernible sensory loss.

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There is not much to add since the experience of 1956. The syndrome is rare. It continues to evoke disbelief when encountered for the first time. Like the other types of Guillain-Barré syndrome, it is related to a preceding *Campylobacter jejuni* infection. The longtime debate whether the pathological changes in the 3rd nerves are central, peripheral or both, has been decided in favour of a peripheral location. Biochemical sculpting never ceases to amaze. I still get the odd telephone call asking if there is anything new.

Having one's name attached to a syndrome is surely flattering but not always is it straightforward. From the beginning it was a question of who was the main contributor to the elucidation of the syndrome, Dr Miller or Dr Fisher. And why was Miller's name always placed first? When a hyphen was placed between the names it became a matter of whether there were two people or just one with a hyphenated name. The disadvantage of having a surname as your forename is never-ending.

On a more serious note, it can be said that the practice of keeping track of every patient examined, which was in place when the two Montreal cases were seen, has proved invaluable. It continues even to the present. Experience is not experience unless it can be retrieved. The system must be simple lest it bog down. It should be much easier with modern computers.

To view an interview with Dr Miller Fisher, see www.musevirtuel.ca/Exhibitions/Medicentre/en/fish_vit.htm



While Neuropathologist at the Montreal General Hospital (1950-54) Dr Fisher proved in 1100 autopsies the importance of atherosclerosis of the carotid arteries in the neck and the occurrence of stroke. The possibility of carotid surgery was raised. In these cases there was often a history of transient paralysis, numbness or speech impairment lasting a few minutes preceding the stroke. These were termed transient ischaemic attacks (TIA's) and served as a warning of an oncoming stroke, providing an opportunity to use anticoagulants or endarterectomy in order to prevent a stroke.

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References

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