

The Case of the Weak Lady, Part 2: The Answer

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Editor's note: [Part 1 of this article \(June 3\)](#) discussed case presentation, with the promise that part 2 would provide the "answer" in the form of Dr. Romero's assessment and treatment strategy.

OK, so where does one start with such a seemingly complex case? Dr. Carrick always made a point of drilling us in repetitive examination procedures, regardless of the complexity or simplicity of the case. Whether a patient presents to my office with a stubbed toe or with symptoms like Mrs. C did, I do a full neurological exam, though it may be streamlined through my experience. A stubbed toe is just a stubbed toe, right? The question is this: Was the stubbed toe "stubbed" because of a slowly progressing foot extensor weakness related to a peripheral neuropathy? You may be the rock star who figures it out before it gets to the point that treatment is more difficult and challenging. (I personally have seen this exact scenario play out, so don't roll your eyes too much.)

But enough of that, let's get to Mrs. C. Here's how I examined her (and how I usually do my examinations):

- I start with my sensory examination of dermatomes and peripheral nerve pathways using both pinprick and vibration, and if the situation calls for, temperature and discriminatory signs, such as cotton swabs, two-point discrimination, etc. I follow this through to the face and eyes, checking CN V and VII. With the tuning fork I will usually do a quick Weber and Rinne to check CN V and CN VIII.
- I go directly to muscle testing, checking not only for quality of muscle contraction, but also for imbalances of musculature from anterior to posterior, muscle differences from side to side (perhaps there is some atrophy on one side), and the general carriage of the muscles. (Are the feet pronated and difficult to turn out? Are the hands pronated and difficult to supinate? Is the imbalance more on one side, or equal bilaterally?) I may or may not do DTRs, depending on what else I have seen, but I usually don't spend too much time on those.
- At this point, I am asking questions and assessing hair on the arms, coloration of the skin, and the response to the testing I have done. Do they have continued spasm after testing? Are they having fasciculations after testing (a sure sign of neurological compromise)? During this whole process, I am also checking pupillary sizes to assess any sympathetic or pain responses as I test.
- I whip out my trusty ophthalmoscope and carefully check the eyes for all things we should check. I would feel lost without a good ophthalmoscope in my examination. You can glean so much information from this one tool that I do not think I would be as effective in my work without it. I also whip out my OPK strip and check the eye reflexes. If you do not know what this is, trust me, it is a world unto itself, but very powerful as a diagnostic tool.
- I finish with the cranial nerves (these are often streamlined also, though depending on the case, I may do the full deal like we learned in school), and then have the patient stand up so I can do my balance tests.

- At this point I go to the spine and start checking spinal function. As a chiropractic neurologist, I am using the spine as a vehicle into the brain and nervous system, so you won't find me looking for leg lengths or whether C3 has a minor deviation to the left. I am not saying these things are not necessary (I can already feel the e-mails flying my way); I just find that when doing this neurological work, most of that goes by the wayside and becomes, let's say, not as important. I also always assess cardiac, pulmonary and digestive function, somewhat for the sake of being thorough, but more so because an evaluation of the autonomic system can provide clues about the neurological system.

This is my examination approach, and I would not say it is better than any other approach. I think just having a system you are comfortable with and sticking to it, so you don't forget anything, is the key.

Let's get back to Mrs. C. The first thing I usually do with patients is sensory examination of the upper and lower extremity. As I noted, both vibration and pinprick were within normal limits. This finding essentially eliminated the possibility of any peripheral nerve disease; as I have stated in previous articles, one of the hallmarks of a peripheral nerve injury is loss of large-diameter axon function. This does include motor function, which was severely compromised in Mrs. C's case, but should also have included sensory involvement, which here was normal. This ruled out any nerve-related diagnosis, of which she had been given many by her numerous doctors.

This finding also minimized the likelihood of any severe or major cerebral cortex injury. Since the sensory findings were intact, the likelihood of trauma or compromise of the sensory strip of the parietal lobe was essentially eliminated. Thus, no possibility of stroke or some other cerebral cortical disorder, such as MS, for Mrs. C - both of which had been diagnosed by doctors who obviously ignored the fact that she had negative MRI tests of the brain.

I did the muscle exam and as mentioned, she had major weakness of both the upper and lower extremity to both anterior and posterior muscles. This is key, in that a stroke or some other disorder would most likely produce a pyramidal-type weakness; in other words, increased facilitation of the anterior muscles above T6 and an increased facilitation of the posterior muscles below T6. One could think perhaps a peripheral nerve disease could produce this level of weakness; perhaps a severe brachial neuritis requiring sympathetic blocks? She had received this diagnosis and recommendation from one of the neurologists, but opted against it (thank goodness).

Perhaps this level of weakness could be of biochemical origin, like a toxicity or diabetes? The only problem with this, of course, is that it was only on her right side; not just the upper extremity, but also the lower extremity on the *same* side. Chemical disorders tend to be systemic, so we should not see something like these symptoms that were only on the one side. Something like ALS, which she was also diagnosed with, would also be bilateral, not unilateral, so this diagnosis would just not make sense.

From here I did the finger to nose, which was off on the right. I did not put much stock in this, though it was off consistently on the right, because she was so darned weak it may have been off regardless of the diagnosis.

The modified Romberg's test was helpful in that her level of weakness was evident, but it was important that closing the eyes caused her to fall immediately. What this tells us is that she was using visual cues to maintain her body upright in the Earth's gravitational field, and upon losing this afferentation, she had to rely only on IA and IIA afferent bombardment from muscles, and the proprioception obviously failed here. We know at this point it is not cerebral cortical, it is not sensory, so the thalamus is most likely precluded, and it is not peripheral because again, sensory

involvement was normal.

Continued examination of cranial nerves was normal, which meant that autonomic activity was good and thus the pons and medulla were most likely intact and functioning. No pontine brain tumor for Mrs. C, though of course this had been put forth as a possible diagnosis, again ignoring the negative MRI.

In the early 20th century, Holmes was the first to describe the severe hypotonia present in soldiers injured in World War I. He described his observation of patients whose cerebellums had been damaged in the war. Holmes described a severe weakness of both anterior and posterior muscles of the ipsilateral side of the lesion, with all other functions essentially intact.

Mrs. C's diagnosis was a *lesion of the cerebellum on the right side*. This diagnosis would explain all her symptoms: the anterior and posterior muscle weakness of the upper and lower extremity, the preservation of sensory function, and the preservation of all her intellectual capacity, though of course she had been severely depressed for many years. She did not need a psychiatric referral for being "depressed and hypochondriacal," as one doctor had put it; she needed a doctor who could fire up the right cerebellum properly.

She was treated on the *right side only* with a coupled adjustment. The right cerebellum receives all its input from the ipsilateral side. If one were to adjust both sides of the body, the symptoms would not improve because we would not be re-balancing the nervous system, just firing it on both sides and perhaps even making it worse. The example I use for patients is a balance scale out of balance; if you have 10 pounds on one side and 5 pounds on the other side, it would not help at all to add 10 pounds to both sides. Adjusting bilaterally would essentially do this.

Immediately upon adjusting the right side, Mrs. C noticeably strengthened on the right side, both the upper and lower extremity. With some directed exercises and a few more treatments, her muscles maintained their strength, and the muscular integrity of the shunt stabilizers of her spine were restored. ([Review my "The Cerebellum and Central Dysdiadokokinesia" article](#) for more in-depth information.)

Congratulations to those who got it right! If you felt you were completely lost with this evaluation, don't fret! With practice and appropriate training, you will get a greater understanding of these findings and once-difficult cases will start to make more and more sense. Hope you enjoyed this and keep up the good work!

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