

A Case of Stroke with Focal Dystonia - A Physiotherapist Perspective

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ABSTRACT

Focal dystonia and stroke are very rare co-existing phenomena and they are very challenging for a physiotherapist. The problem encountered is the hand function which is very vital for functional activity and hence for the quality of life. Here we have presented a 56-year-old patient with right hemiplegia and focal dystonia co-existing and his physiotherapy management strategy. Though there is a limited success following 8 weeks of management in this case report, there are good take-home messages in the assessment, activity limitation, and participation restriction faced by the patient.

Keywords: Stroke, hemiplegia, Focal dystonia, Hand function, rehabilitation, physiotherapy.

INTRODUCTION

Stroke is a very important condition from a physiotherapist's perspective as it offers a lot of challenges in rehabilitation. The main challenges faced by a physiotherapist while the rehabilitation of stroke patients are the uniqueness with which every patient presents based upon the brain lesion, location extent, and duration of the same. (Brandstater & Shutter, 2002) The next challenges are problems in comprehension and perception which are often an obstacle and limitations for a physiotherapist. The prognosis is also affected by other comorbidity and the age of the patient.

apart from these challenges, the rehabilitation of hand function is a major challenge in the rehabilitation of stroke. The hand has the major representation area in the brain and hence it is a highly affected function in the human body. The hand also has various movement combinations and permutations which offers even more difficulty in the management of stroke. Adding to this if there is focal dystonia (FD) which is a rare condition that offers difficulty in the handwriting aspect of hand function along with preservation of other functions. (Pont-Sunyer et al., 2010) Here we have presented a patient with right hemiplegia and focal dystonia co-existing. Though the physiotherapy management strategy resulted in limited success following 8 weeks of management in this case report, there are good take-home messages in the assessment, activity limitation, and participation restriction faced by the patient.

Patient Information

A 56-year-old male who had worked as a bench clerk and retired from a government office presented to the physiotherapy department at a private hospital. The patient sustained a stroke to the dominant side of the brain 40 days before for which he was treated conservatively with medications and initial physiotherapy. The patient sustained

a middle cerebral artery ischemic stroke. The patient reportedly had type 2 diabetes and no other comorbidity. The patient had worked for 33 years before he retired with difficulty in writing which he had been doing throughout his carrier. The reason presented was a pain in the upper limb and hand muscle cramps on writing for a long which was believed to be due to chronic cervical spondylosis.

Currently, the patient presented with mild weakness of the lower limb and good upper limb function. The patient was able to perform all his day-to-day activities without even supervision. The Functional wheel of the patient revealed that the patient had dysfunction only in writing and very fine activities. The patient was stable both psychologically and socially. The patient had undergone physiotherapy for chronic cervical spondylosis in the form of electrotherapy and cervical stabilization exercises which had given him limited benefits in terms of hand function but gave a significant improvement in the pain and overall hand function.

Physiotherapy Assessment

The patient's chief complaint is the inability to write using the affected arm for the past 40 days. However, the patient also gives a history of pain in writing for two to more sentences before the onset of the stroke. There was no significant finding on

observation and palpation. On physical examination, the deep tendon reflex was brisk in the right upper limb and normal in the right lower limb. There was no significant tone abnormality with good voluntary control of the lower limb and the right shoulder elbow and forearm. The index finger and thumb coordination were slightly reduced and the pad-to-pad precision activity was weak. When asked to write the patient was able to hold the pen or pencil but could not even write a single word. To our surprise, the patient had good hand function skills associated with grooming, feeding, toileting, and any other functional activity. The patient also had good muscle power of both intrinsic and extrinsic muscles of the hand flexor component and extensor component.

After a complete assessment of the patient, the physiotherapist discussed the condition with two more neuro physiotherapists and they doubted the co-existence of focal dystonia and stroke. To confirm if the FD was present even before the stroke, the subjective examination was revisited where questions were raised regarding a load of writing and relevant history. The three therapists assessed the patient over zoom meet and found that the patient had difficulty in writing even before the stroke and there was a possibility of him suffering from focal dystonia due to the reasons listed in table 1

Table 1 – The 6 predominant Clinical reasoning for confirmation of FD

No.	Criteria
1	The patient was a writer by profession who used to fill or write around 40 A4 pages every day for the past 33 years.
2	The patient was not able to write with any writing device on a paper, as he developed pain that radiated from periphery to elbow and shoulder
3	The patient had preserved hand function other than writing skills.
4	The patient's writing was so clear initially for two to seven words and further deteriorated and after 2 sentences it was scribbling and finally pain stopped the function
5	The muscle power and range of motion of the joint were normal
6	The onset was insidious with preserved drawing skills (horizontal, vertical and oblique lines, shapes like triangle, circle, figures and so on was good)

Therapeutic intervention

The patient now presents with a few provisional problems and difficulty in writing which was the primary problem list. The main goal of physiotherapy was to strengthen the hand muscles, improve precision activity and coordination, and

initiate writing skills. The patient was provided with counseling along with his family members initially and then was treated with voluntary control training. As he was not able to draw lines, shapes, and figures (which he was able to do before the stroke) they were considered precursors to

writing training. After such training for two weeks, the writing skills were also trained by means of assisted writing, tracking, cursive writing, and usage of mental imagery techniques. Relaxation techniques were also educated when the patient developed anxiety and faced failure.

Outcomes

As there was no specific tool to evaluate the prognosis, hence the number of comprehensible words written was considered as a primary outcome, and the patient's exertion level while writing and satisfaction level with the treatment was considered the second outcome of the study. The patient was able to write 7 words with good comprehension however he was not able to make a full comprehensible statement as cramps set in following 8 weeks of intervention. There were no big changes in expression level which went down from 7 to 6 however the patient felt he was able to draw lines, and shapes much easier than before and was able to write better on walls.

DISCUSSION

Focal Dystonia is a rare problem faced by professionals who are involved in repeated activity like musicians, writers and so on. (Aránguiz et al., 2011) Adult-onset idiopathic isolated focal dystonia presents with a number of phenotypes. Reported prevalence rates vary considerably. (Williams et al., 2017) Traditional definitions of focal dystonia point to its motor component, mainly affecting planning and execution of voluntary movements. However, focal dystonia is tightly linked also to sensory dysfunction. Accurate motor control requires an optimal processing of afferent inputs from different sensory systems, in particular visual and somatosensory (e.g., touch and proprioception). Several experimental studies indicate that sensory-motor integration - the process through which sensory information is used to plan, execute,

and monitor movements - is impaired in focal dystonia. (Avanzino et al., 2015)

Hence in this case we have also tried to give the patient sensory feedback and also the feel of holding the tool and writing or drawing along with the sensory feed back was tried. The case offered a challenge in diagnosis and framing the problem list. The take home message in this case report is the physiotherapist should not miss out on any other preexisting disorders and should not hesitate in revisiting the subjective assessment and finally take the clinical decision.

Patient Perspective: The fact that stroke is not reason for my writing difficulty was explained to me following which I was feeling less stressed and my anxiety levels dropped and the rehabilitation was performed in stages which helped in reducing my excursion.

Informed Consent The patient gave his written informed consent and willingness to document his perspective about the treatment.

Declaration by Authors

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Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Aránguiz, R., Chana-Cuevas, P., Alburquerque, D., & León, M. (2011). Focal dystonia in musicians. *Neurologia (Barcelona, Spain)*, 26(1), 45–52. <https://doi.org/10.1016/j.nrl.2010.09.019>
2. Avanzino, L., Tinazzi, M., Ionta, S., & Fiorio, M. (2015). Sensory-motor integration in focal dystonia. *Neuropsychologia*, 79(Pt B), 288–300. <https://doi.org/10.1016/j.neuropsychologia.2015.07.008>
3. Brandstater, M. E., & Shutter, L. A. (2002). Rehabilitation interventions during acute care of stroke patients. *Topics in Stroke Rehabilitation*, 9(2), 48–56.

- <https://doi.org/10.1310/YGAX-X5VK-NHVD-HGPA>
4. Pont-Sunyer, C., Martí, M. J., & Tolosa, E. (2010). Focal limb dystonia. *European Journal of Neurology*, 17 Suppl 1, 22–27. <https://doi.org/10.1111/j.1468-1331.2010.03046.x>
 5. Williams, L., McGovern, E., Kimmich, O., Molloy, A., Beiser, I., Butler, J. S., Molloy, F., Logan, P., Healy, D. G., Lynch, T., Walsh, R., Cassidy, L., Moriarty, P., Moore, H., McSwiney, T., Walsh, C., O’Riordan, S., & Hutchinson, M. (2017). Epidemiological, clinical and genetic aspects of adult onset isolated focal dystonia in Ireland. *European Journal of Neurology*, 24(1), 73–81. <https://doi.org/10.1111/ene.13133>

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