Reviewer’s report

Title: Central poststroke pain: somatossensory abnormalities and the presence of associated myofascial pain syndrome.

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Reviewer: Henriette Klit

Reviewer’s report:

This an interesting article looking at the prevalence of myofascial pain syndrome (MPS) in 40 patients with CPSP. Other post-stroke pain (PSP) conditions are common in patients with CPSP and may influence the treatment. Making the differential diagnosis between CPSP and other concomitant PSP conditions is often difficult and not much research has been done in this field. Therefore this is an interesting topic, but unfortunately the authors do not explain in detail how MPS was diagnosed.

The authors find a very high prevalence of MPS in the patients. The question is whether this is a direct consequence of the stroke or is related to motor deficits. Unfortunately this is barely discussed. Nor is there a control group, so the prevalence of MPS in stroke patients with other PSP pain conditions is not known. A clear distinction between CPSP and PSP in not made in the paper.

- Major Compulsory Revisions

The author must respond to these before a decision on publication can be reached. For example, additional necessary experiments or controls, statistical mistakes, errors in interpretation.

1. Abstract and conclusion. "MPS is frequently under-diagnosed in CPSP patients. Its presence has important therapeutic implications and can improve the clinical outcome when identified and treated."

-This paper suggests that myofascial pain syndrome (MPS) is common in patients with central post-stroke pain (CPSP) and may be under-diagnosed. Unfortunately there is no control group, so it is not possible to say if this condition is more common in patients with CPSP as compared to other pain patients, patients with PSP or stroke patients with the same amount of motor deficits.

2. Abstract and conclusion. "Its presence has important therapeutic implications and can improve the clinical outcome when identified and treated."

-I do not think the authors have the evidence to support the statement that identification and treatment of MPS can improve the clinical outcome. In contrast, the report that patients CPSP patients with and without MPS did not differ in pain intensity, MPQ or BDS, indicating that MPS does not play an important role by itself.

3. Abstract and conclusion. "The presence of MPS is not an exception in CPSP
I disagree with this statement. Although MPS seems to be common in patients with CPSP, it is not necessarily a part of the CPSP spectrum, while MPS should perhaps be accepted as a part of the spectrum of post-stroke pain (PSP).

Central neuropathic pain is defined by the International Association for the Study of Pain as "pain caused by a lesion or disease of the central somatosensory nervous system". This implies that only pain directly due to the lesion in the CNS can be classified as central neuropathic pain. Central post-stroke pain (CPSP) is a central neuropathic pain condition where the underlying disease is the stroke. In contrast, post-stroke pain (PSP) is a term used for all types of pain conditions seen in stroke patients, including CPSP, poststroke shoulder pain and other musculoskeletal pain conditions. A clear distinction should be made between pain conditions due directly to a lesion of the CNS and peripheral pain conditions involving central mechanisms. As such, if a myofascial pain syndrome (MPS) is found in a stroke survivor, this can be classified as PSP, but not as CPSP (Klit, H., Finnerup, N.B., Jensen, T.S., Central post-stroke pain: clinical characteristics, pathophysiology, and management. Lancet Neurology 2009, vol 8 (9):857. For discussion see: Roosink, M., Geurts, A.C., Ijzerman, M.J. Defining post-stroke pain: diagnostic challenges. Lancet Neurology 2010, vol 9(4):344 and Klit, H., Finnerup, N.B., Jensen, T.S. Author's reply. Lancet Neurology 2010, vol 9(4):344).

In stroke patients with pain, several pain types might be present in the same area of the body and it can be difficult to separate central neuropathic pain from other types of PSP. The differential diagnosis is based on the sensory findings, location of the lesion, and specific findings on clinical examination. In the case of MPS, such findings may include taut palpable bands in the muscles, distinct patterns of referred pain, satellite trigger points and a limited range of movement.

3. Background. MPS is not defined in this section. How was it defined? How common is it in other pain populations or controls? Since one of the major conclusions of the article is, that MPS is very common in CPSP, these are necessary informations in order to evaluate the findings.

4. Methods, clinical investigation. “MPS was defined by the appearance of pain of identical characteristic, referred pattern, and cutaneous manifestations after the palpation of an active trigger point[20] in one of the predefined muscles”

- This is unclear to me. What is meant by identical characteristics? Which predefined muscles? Was there a minimum pain score or rating system. The authors need to more clearly explain how MPS was defined.

5. Figure 1. Unfortunately, the quality of the available online artwork was not high enough to evaluate the figure. I think is it important to include the figure in the paper (in proper quality).

- Minor Essential Revisions

The author can be trusted to make these. For example, missing labels on figures,
the wrong use of a term, spelling mistakes.

1. Background, reference
I do not know the cited article, but usually the reference for this statement is made to this article: Edinger L: Giebt es central antstehender Schmerzen?. Dtsch Z Nervenheilk 1.262-282.1891

2. Background, “...it has been recently proposed that CPSP should be a diagnosis of exclusion, uniquely reserved for patients with PSP and no other pain syndromes[17].”
-I do not quite agree with this statement. In our review (ref 17), we suggest some diagnostic criteria for CPSP which include that “Other causes of pain, such as nociceptive or peripheral neuropathic pain, are excluded or considered highly unlikely”. We never said that other pain syndromes could not be present, in fact, we do state in the article, that the presence of other concomitant PSP conditions is common in patients with CPSP (Klit et al, Lancet Neurol 2009).

3. Background. “Although apparently sound, this proposal must be tested, since it is not known to which extent CPSP overlaps with other PCP syndromes such as MPS.
Should read PSP not PCP.

4. Methods. Inclusion criteria. “Inclusion criteria were adults (> 18 years), presenting chronic definite neuropathic pain[16]...”
For clarification, the authors do mean definite central neuropathic pain?

5. Methods, clinical evaluation. “Patients were taught about the characteristics of their neuropathic pain.”
-Patients were interviewed?

6. Results and discussion. “Thirty-six (90.0%) patients had one single ischemic stroke. Six (15%) had more than one vascular event.”
-This gives a total of 42 patients, not 40.

7. Results and discussion. “Mean pain intensity was 89±14mm (51-100).”
Since pain intensity is clearly not normally distributed in this sample, I suggest the use of percentiles instead of standard deviations here. Is this the present pain intensity or the mean pain over time?

8. Discussion. “Interestingly, despite the obvious implication in treatment and rehabilitation, the presence of MPS was not associated with more intense pain or pain associated mood disorders in CPSP patients. This is a strong argument for a reappraisal of the current CPSP definition.[17]”
-I do agree that the CPSP definition can probably be improved, but I am not sure I follow the given argument. First of all, the fact that the presence of MPS was not associated with more intense pain or mood disorders may as well point to the fact that the way MPS was diagnosed in this sample was inaccurate or that the
presence of MPS in CPSP patients does not influence their overall pain status or mood. Secondly, it is unclear whether the authors actually used this classification in the paper.

9. Discussion. “It has been recently proposed that CPSP should be a diagnosis of exclusion in PSP patients, despite the absence of published data or clinical experience to backup this proposal. Our data suggest that this proposal will fail to detect more than half of all the individuals with definite central neuropathic pain in this population.”

What is the reference for the first part of this statement? In our review, we suggested that CPSP be a diagnosis of exclusion, not PSP. Also our proposed definition does not exclude patients with other pain conditions, but merely states that the diagnosis of CPSP should only be made when other cause of pain is unlikely. Please see previous comment (#2).

10. Discussion. “And more importantly, our data showed that MPS should be viewed as part of the CPSP syndrome complex”.

As I understand it, MPS is due to a peripheral disease, although central mechanism play a role in this pain condition, as in most other chronic pain conditions. MPS should perhaps be viewed as a part of the PSP spectrum, but not as a central pain syndrome as there is not direct relation to a lesion in the CNS.

11. Discussion. “It is prevalent and its presence did not impose pain of higher intensity of more severe interference in this group of patients.”

How do the authors explain this? Please elaborate.

12. Discussion. “In short, neurovegetative signs may be epiphenomenal in CPSP patients.”

I disagree. In my experience autonomic signs are quite rare in CPSP patients in my country (Denmark), whereas it has been reported to be quite common in e.g. Turkey. I think the extent of autonomic dysfunction has to do with the degree of immobilisation and physical therapy. Also, in some conditions, an autonomic finding may be directly caused by the stroke, as e.g. a Horners syndrome I lateral medullary infarcts. Some authors have reported autonomic dysfunction as a part of MPS, but this is not discussed in the paper.

13. Discussion. The use of treatment is not discussed. Do the patients receive pain medication. What kind? Are they taking any antidepressants or antiepileptics that may reduce the pain from CPSP? Or NSAID? Can this have influenced on the pain score? Do they receive other kinds of treatment that might influence the MPS, such as massage or acupuncture?

14. Table 1. What is hypopalestesia? Please define or use another word.

- Discretionary Revisions
  These are recommendations for improvement which the author can choose to
ignore. For example clarifications, data that would be useful but not essential.

1. Background. Last line “...to assess the presence of other non-neuropathic pain syndromes, and in particular, the role of myofascial pain syndrome in this sample.”
Since only MPS is reported in the paper, the authors should consider revising the sentence.

2. Methods/table 2. The authors should consider revision the section on the sensory examination, so that it fits better with the table. E.g. hyperalgesia was tested using pinprick.

3. Discussion. “This finding could be a consequence of the magnitude of the motor deficits and spasticity.”
I think this a very valid and important point. If at all possible, the authors should try to report the degree of motor deficits of the patients and correlate it to the presence of MPS.

4. I would like to see a table included in the supplementary material of the paper summarizing the duration of pain, time from stroke to onset of pain, location of stroke, concomittant diseases, and treatment of each patient.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests