Reviewer's report

Title: Compulsive carnival song whistling following cardiac arrest: a case study

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Reviewer: Leonardo Fontenelle

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Major Compulsory Revisions

1. In my opinion, the scope of the differential diagnosis has to be expanded. For instance, what about perseverative, stereotyped or even maneiristic behaviors? The authors should at least mention this and provide greater support for their main diagnostic alternatives (frontal syndrome, punding and OCD).

2. Authors argue that a careful diagnostic assessment is needed to differentiate frontal syndrome, punding and OCD. However, they don’t explain why these conditions can be similar. Further, to me, the authors seem to mix symptoms, syndromes and nosological entities. For instance, frontal syndromes (an anatomical concept) may be associated with conditions that cannot be differentiated from OCD or punding.

3. There is a suggestion that cases of fronto-temporal dementia accompanied with more compulsive behavior are specifically related to orbitofrontal-basal ganglia dysfunction. The authors should provide references to that since, to the best of my knowledge, there is only one study attempting to establish such a relationship (Rosso et al. Complex compulsive behaviour in the temporal variant of frontotemporal dementia. J Neurol. 2001; 248(11): 965-70.). This study suggested that temporal lobe atrophy appears to mediate complex compulsive behaviors in patients with fronto-temporal dementia.

4. The authors simply do not provide sufficient evidence that their patient’s symptom could be better conceptualized as a compulsion. They jump from saying that “… it does not fit all features of these diagnoses and may be present as an independent symptom” to “One may conclude that the whistling with its repetitions is primarily compulsive rather than impulsive or disinhibitive with the constant urge to whistle and the anxiety felt when asked to stop rather than acting without foresight”. Please, could you link both?

5. Authors argue that all three disorders mentioned may show compulsive symptoms that are attributed to disturbances in the cortico-striatal pathway. However, there are problems with this sentence. Firstly, I am not sure whether these conditions can be classified as disorders. Secondly, they do not provide any clear evidence supporting the suggestion that frontal lobe syndrome and punding are related to compulsivity.

Minor Essential Revisions
6. The authors argue that depression and generalized anxiety disorder are most prevalent conditions following structural lesions. They should provide references for this statement.

7. Compulsivity is defined as a repetitive, irresistible urge to perform a behavior, the experience of loss of voluntary control over this intense urge and the tendency to perform repetitive acts in a habitual or stereotyped manner. The authors should provide references for this statement and explain whether the three criteria should be met at the same time.

8. There is a suggestion that compulsivity may be sometimes difficult to distinguish from impulsivity as both symptoms may occur following infarction. I was unable to follow the authors reasoning here. The difficulty in differentiating compulsivity from impulsivity is not due to the fact that both conditions follow infarction but due to their phenomenological similarities, which I understand that the authors know quite well.

9. It is better to name the “Conclusion” section as a “Discussion” section.

10. Authors suggest that specific lesions are known to be involved in OCD, such as frontal regions and the basal ganglia but do not provide references.

11. There is a suggestion that, like idiopathic OCD, acquired OCD after brain injuries responds well to SRI treatment, but this is not completely clear in the literature, with some cases suggesting that organic OCD may also be associated with treatment-resistance (Yariura-Tobias et al., Behav Modif. 2000;24(4):553-65).

Discretionary Revisions

12. Is it really necessary to state that the patients whistled a carnival song in the title?

13. It is difficult to define punding. Arguing that Punding is characterized by purposeless and stereotyped behavior doesn’t help too much, since these features are characteristic of many other types of behavior. I don't have a clear solution for this but I find it more appropriate to define it by its etiology rather than form, since even ordering or cleaning (McKeon et al., Parkinsonism Relat Disord. 2007; 13(8): 516-9; and Kurlan et al., Mov Disord. 2004; 19(4):433-7) have been described as forms of punding. Could the authors comment on that?

**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.