Reviewer’s report

Title: Concurrent presentation of thyroid storm and diabetic ketoacidosis: a systematic review of previously reported cases

Version: 0 Date: 12 Mar 2019

Reviewer: Ketan Dhatariya

Reviewer's report:

Thank you very much for asking me to review this paper. I think there are several things that need to be addressed before it is considered possible to publish this.

In the abstract the results section needs to be tidied up. Most of the second half of the results paragraph is rather confusing and I would suggest they say that 'in all cases where it was measured the tests were positive'. And in the conclusion I would suggest that maybe the emphasis needs to change and it should say that efforts should be made to maximise patient compliance to treat them, rather than predispositions due to poor compliance.

In the background section most of the first paragraph can be safely omitted in terms of what DKA is and how it occurs, because it is irrelevant to the thrust of the manuscript.

They also need to consider the grammar throughout the document

The background really should be just a small paragraph on what is known, what is not known and what they have done to fill the gap.

Instead of reference 6 I would suggest they use the paper by Umpierrez and colleagues from Nature Reviews Endocrinology 2016;12(4):222-232.

I wonder whether the authors may want to use a better reference than reference 7, such as the paper in Thyroid 2019 from Galindo and colleagues; 29(1):36-43, or from Akamizu and colleagues from Thyroid in 2012;12(7):661-679.

The authors suggest that it may be the DKA which causes the thyroid storm; I would strongly argue it's the other way round, that the thyroid storm precipitates the DKA.

In the methods section the authors use reference 16, which is the old version of their reference 1 and I am unsure as to why they have used 2 different references for the same thing.

Throughout the document I am not sure why the authors have put in the single figures with the number zero prior to it, such as in the first line of the results section and in line 17, where they say 04 rather than just 4.
It should be 112 articles and they should say the full text of the remaining 28 reports in that paragraph on the results.

In the clinical presentation section I would say what are the defining features of thyroid storms and the tables are extremely confusing and most of them are unnecessary because there is a large degree of overlap between the tables and the text. Certainly table 2 is extremely confusing in this respect and certainly I spent a long time trying to make sense of them, such as the section on central nervous system disturbance; mild 42%, moderate 42%, severe 11% and absent 5%, and yet they then say 19, which equals 66% so do they say that anybody who had central nervous disturbance 66% of them had something. This is very unusually and confusingly written and I would strongly urge the authors to revise their document.

In table 4, when they say the range of pH was 7.4 and a bicarbonate was up to 19, these cases were clearly not then diabetic ketoacidosis, using whichever definition they use, either the ADA or the UK guideline which states that pH must be less than 7.3. Even with the mild DKA definition using the ADA guideline it should say a bicarbonate of 18 or less and therefore with a bicarbonate of 19 this could not have been DKA, therefore I am very suspicious of the data that the authors are using.

Table 5 is completely unnecessary.

Table 6, I am not sure how the authors have defined compliance and certainly how they define poor compliance; they need to talk about papers that define these.

Also the authors talk about current diabetic type and I would strongly urge the authors to avoid the term 'diabetic' in all circumstances. A person should never be described by the condition that they have and therefore it should be current diabetes treatment. This also then begs the question as to whether this is a pre or post presentation.

In the paragraph saying the examination findings, the authors say the respiratory rate was present in 10 patients. I am surprised because presumably all the patients were alive, therefore they were all breathing. I wonder whether the authors meant respiratory rate was recorded in 10 patients.

This reviewer wonders why thyroglobulin would ever be measured in people with thyrotoxicosis. All it is a measure of is the presence of thyroid tissue and is really only used to monitor thyroid cancer progression once somebody has had surgery or/ and radiotherapy.

In the same paragraph the authors say that the reported ECG findings, which 80% reported tachycardia, but earlier on they mention that 100% of all patients had tachycardia, so this is surprising that there is a 20% discrepancy.

I wonder what the relevance is of the autopsy reports and certainly also the chest x-ray, and how this can be relevant other than if it showed the presence of heart failure due to high output heart failure due to tachycardia.
Similarly, table 9 is completely unnecessary and adds nothing to the manuscript.

In the treatment modality section they said 28 cases out of the 29 and similarly in the second paragraph they said 12 patients were reported to be discharged from hospital. Once again this is a matter of language and I am sure all of the patients were discharged from hospital, other than those that died, and therefore this is a strange sentence.

The discussion reads very unusually. The discussion should start by stating what the findings of the study were within one or two sentences. Otherwise it is currently very rambling as it is currently written and really doesn't add very much.

In summary I do not think this paper is suitable for publication. There also seems to be an omission with this reviewer doing at least one further search and finding a further paper by Mercer and colleagues in the Journal of Diabetes and its Complications 2011;25:208-210.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Unable to assess

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

No

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If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

Not relevant to this manuscript

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