Reviewer's report

Title: Potential risk factors associated with human encephalitis: application of canonical correlation analysis

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Reviewer: William Reisen

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Review of BMC 1364451746484500 Hamid et al. Potential risk factors associated with human encephalitis....

General: The authors applied canonical correlation analysis to a data set consisting of 268 patients from 24 hospitals located in three areas of the UK. Data consisted of 16 symptom, 6 diagnostic and 13 exposure variables, but not all data was available for all patients; even simple data such as sex was only available for 208 patients. Two other papers ‘in press’ or ‘under review’ evaluate the ‘causes of encephalitis’ and provide a cluster analysis of the symptoms. These ‘causes’ were not evident from the current paper and were not used to direct the statistical analysis. The statistical analyses seemed to be applied correctly, although I was not certain how Fig. 1 really helped us understand the results. Fig. 2 seemed less informative that the standard two dimensional presentation available within R that allows sign to direct the degree and strength of the associations.

Although I strongly agree with the need for research on the causes and epidemiology of encephalitis, I found the current statistical ‘fishing expedition’ relating clinical symptoms to environmental risk not very useful. If anything, the statistical associations added more confusion than provided answers. For example, the authors indicated that tick and insect bites were ‘novel exposures’, strongly associated with clinical outcomes, but <7% of the patients had these exposure histories and none were reported to have been infected with an etiological agent transmitted by these arthropods? How does this finding help our understanding of the 268 encephalitis cases? If these data showed that many of the patients [say >40%] had a history of insect bite and were clustered spatially and temporally, then these findings would be useful to promote a detailed search for an emerging arthropod transmitted pathogen.

So what have we learned here? The current paper did associate several symptoms and diagnostics with the 268 encephalitis cases, but I presume these are described already in the submitted papers? In my view the most compelling outcome was that the authors could not strongly ascribe most of the exposure variables to most of the cases, and therefore as presented by the authors in the Introduction we really don’t know much about the etiology of these illnesses. I'm not sure this conclusion warrants publication?
Level of interest: An article of limited interest

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