Reviewer’s report

Title: Progressive multifocal leukoencephalopathy associated with thymoma with immunodeficiency: a case report and literature review

Version: 0 Date: 02 Feb 2018

Reviewer: Kazuo Fujihara

Reviewer’s report:

This is a 47 year-old woman with a history of invasive thymoma and myasthenia gravis who developed aphasia and gait disturbance and was diagnosed with progressive multifocal leukoencephalopathy (PML) based on clinical and MRI findings and detection of JCV DNA in the cerebrospinal fluid by PCR (Human immunodeficiency virus (HIV) was negative.). The patient had received chemotherapy for intractable invasive thymoma and was found to have severe cellular and humoral immunodeficiency (severe lymphopenia, very low numbers of CD4+ and CD8+T cells and CD19+B cells and hypoimmunoglobulinemia of all subclasses). Authors concluded that that this is the first case of non-HIV-related PML associated with Good syndrome, a disease characterized by thymoma and immunodeficiency.

There is no doubt that the patient developed PML in the context of profound humoral and cellular immunodeficiency, and this is potentially an interesting case. However, as authors discussed, the main problem with this case is whether the immunodeficiency was induced by chemotherapy or linked to Good syndrome. The patient had invasive thymoma for more than 20 years and received multiple chemotherapy which could induce the prolonged immunosuppressive state. Thus, it is difficult to make a definitive diagnosis of Good syndrome in the present case. It would be desirable to provide data of genetic alterations or other biomarkers specifically associated with Good syndrome to confirm the diagnosis.

Other points

1.Line 83, "fatal", "potentially-fatal" would be more precise.

2.Line 87, "including monoclonal antibodies", should be replace by "including natalizumab and other monoclonal antibodies"

3.English editing is needed.

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

Yes

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

Yes

**Are the conclusions drawn adequately supported by the data shown?**
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Unable to assess

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
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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Please indicate the quality of language in the manuscript:

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