



## Introduction

- Tics are defined by the DSM-V as a sudden, rapid, recurrent, nonrhythmic motor movement or vocalization (1)
- The onset of tics in adults is usually the result of a neurodegenerative disorder, trauma, infection and drug exposure (2)
- Movement disorders have been described in the context of different types of encephalitis (3)
- Among hyperkinetic manifestations, tics have sporadically been reported in cases of encephalitis resulting from a range of aetiologies.

## Aims and methodology

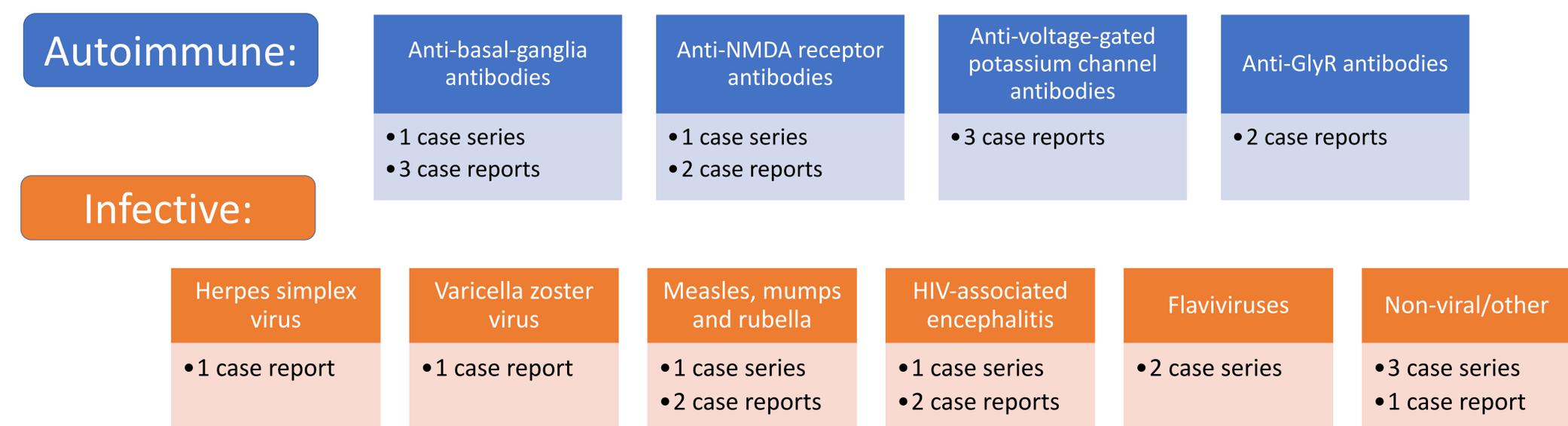
**Aim** To assess the prevalence and characteristics of tics in patients with encephalitis.

**Methods** We conducted a systematic literature review of original studies on the major scientific databases, according to the standards outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

## Results

- There is an established association between tics and encephalitis lethargica
- Our literature search identified reports of tics in patients with:
  - immune-mediated pathologies (including autoimmune encephalitides affecting the N-methyl-d-aspartate receptor, voltage gated potassium channels, and glycine receptors)
  - infective processes (ranging from relatively common viral pathogens, such as herpes simplex, to prions, as in Creutzfeldt-Jakob disease).
- Tics were most commonly reported in the post-encephalitic period and involvement of the basal ganglia was frequently observed.
- Tics could be more common manifestations of encephalitis than identified by this review due to the frequently ambiguous descriptions of movement disorders and lack of specialist assessment noted in case series and reports.

Figure 1: summary of the systematic search results



## Future directions:

- The association of new-onset tics and encephalitis, in the background of other neuropsychiatric abnormalities, has practical implications, potentially improving the detection of encephalitis based on clinical features.
- Future research should focus on the categorisation and treatment of hyperkinetic movement disorders associated with encephalitis.

### REFERENCES

- 1: American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, (2013), 5th Edition. Arlington, VA, American Psychiatric Association.
- 2: Hoffman, L.A. and Vilensky, J.A. (2017). Encephalitis lethargica: 100 years after the epidemic. *Brain*, 140(8), 2246-2251.
- 3: Misra, U. K., & Kalita, J., (2010), Spectrum of movement disorders in encephalitis. *J. Neurol.* 257(12), 2052-2058.