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Safety, tolerability, and efficacy of fluoxetine as an antiviral for acute flaccid myelitis

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Study objective

To assess the safety, tolerability, and efficacy of fluoxetine for proven or presumptive enterovirus D68 (EV-D68)–associated acute flaccid myelitis (AFM).

Summary results

Fluoxetine was well tolerated but did not show a signal of efficacy in patients with EV-D68–associated AFM.

Classification of evidence

Class IV.

What is known and what this paper adds

In 2014, clusters of EV-D68–associated AFM cases were noted, and subsequent in vitro studies suggested that fluoxetine could inhibit replication of the EV-D68 strains circulating in 2014. However, this study did not demonstrate a signal of clinical efficacy of fluoxetine for EV-D68–associated AFM at the doses administered.

Participants and setting

This study examined data for 56 patients who were treated at 12 US centers. These patients experienced acute-onset limb weakness or cranial nerve dysfunction and had MRI evidence of gray matter lesions in the spinal cord or brainstem motor nuclei. The dates of onset were between January 1, 2015, and November 1, 2016.

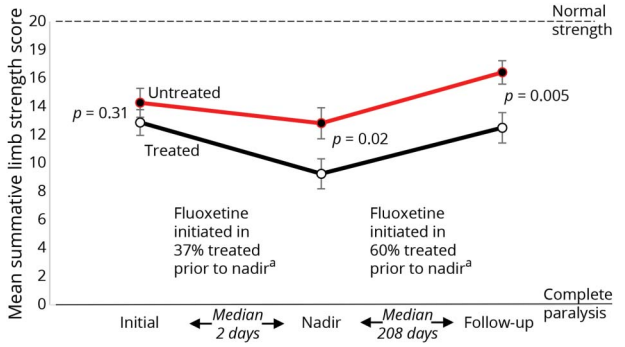
Design, size, and duration

The patients underwent treatments selected by their healthcare providers. This study collected clinical data via chart review and conducted an intention-to-treat analysis comparing fluoxetine-exposed patients and nonexposed patients in terms of adverse events. For efficacy analyses, this study compared patients receiving ≥2 fluoxetine doses to those receiving <2 fluoxetine doses. The efficacy assessments were based on limb muscle strength assessments using Medical Research Council scores that were used to tally summative limb strength scores (SLSSs).

Primary outcome measures

The primary efficacy outcome was the between-group difference in SLSS change from initial presentation to the latest follow-up (increase in SLSS representing improvement).

Figure Unadjusted changes in mean SLSS scores over time in patients who were (black) or were not (red) treated with ≥2 fluoxetine doses



Main results and the role of chance

The 30 fluoxetine-exposed patients experienced no serious adverse events and had an overall adverse effect rate similar to that for the 26 unexposed patients (47% vs 65%; $p = 0.16$). In propensity-adjusted analysis, the mean SLSS change in the 28 patients who received ≥2 fluoxetine doses was 0.2 lower at latest follow-up than initial examination vs 2.5 higher in the other 28 patients ($p = 0.015$).

Bias, confounding, and other reasons for caution

Treatment with fluoxetine was based on provider discretion rather than randomization. This study was retrospective and had a small sample size. EV-D68 infections were only confirmed in some patients. The limb strength assessments were highly operator-dependent.

Generalizability to other populations

This study's single-country nature may limit the international generalizability of the results.

Study funding/potential competing interests

Some investigators on this study were funded by the NIH. The authors report no competing interests. Go to Neurology.org/N for full disclosures.

A draft of the short-form article was written by M. Dalefield, a writer with Editage, a division of Cactus Communications. The authors of the full-length article and the journal editors edited and approved the final version.

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