Life-Threatening Tumefactive Rebound of Multiple Sclerosis following Fingolimod Discontinuation

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INTRODUCTION

- Fingolimod is an oral disease modifying agent, FDA-approved in 2010 for relapsing multiple sclerosis, that acts by selectively retaining T-lymphocytes in secondary lymphoid organs.
- It has been shown to reduce annualized relapse rate and MRI activity.
- Relatively safe; have to monitor for initial bradycardia and macular edema
- However, aggressive rebound activity after withdrawal of fingolimod, especially after 2-4 months following discontinuation have been increasingly reported.

OBJECTIVE

- To describe a patient who was on fingolimod for 2.5 years (also was previously on natalizumab), who after 6 weeks after discontinuing it for disease activity on imaging, developed disproportionate severe disease activity as compared to her original disease burden.

CLINICAL HISTORY OF PATIENT

- 40 year old African-American woman with history of relapsing-remitting MS for at least 10 years. Was initially on interferon beta-1a for a few years. Had a clinical flare in December 2011, and was started on natalizumab (negative JC virus antibodies). Did well till October 2013 when she had high titer JCV antibodies. Was stopped in late October 2013, and then started on fingolimod in January 2014. 2 weeks later, had a clinical relapse with multiple new lesions, and responded to 2 courses of steroids.
- Did very well on fingolimod for next 2 years:from January 2014-June 2017. Except: on surveillance MRIs, had 2 enhancing lesions in September 2016, and another in February 2017.

CLINICAL HISTORY OF PATIENT

- Therefore, fingolimod was discontinued in June 2017, with plans to start new medication. Delayed starting dimethyl fumarate till August 2017 to allow lymphocyte counts to normalize.
- Did well off fingolimod for 6 weeks, following which she developed gait ataxia.
- Treated with high dose steroids, with only partial improvement initially, followed by worsening paraparesis which also did not show improvement with repeat steroids.
- Had 5 sessions of plasmapheresis, with no improvement. By now she was bed bound with no movements in lower extremities.
- MRI showed numerous coalescing and enhancing lesions throughout brain and spinal cord.
- Patient eventually became quadriplegic and went into respiratory failure requiring mechanical ventilation

IMAGING

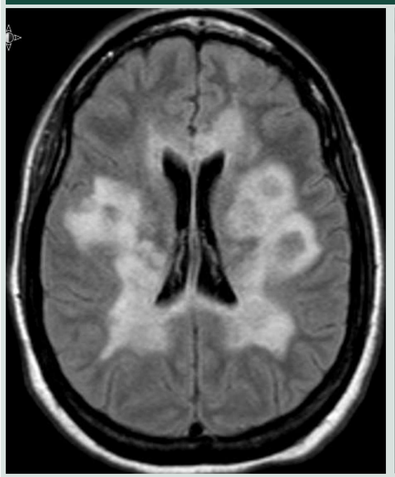

Figure 1: Large coalescing lesions present diffusely in the supratentorial white matter

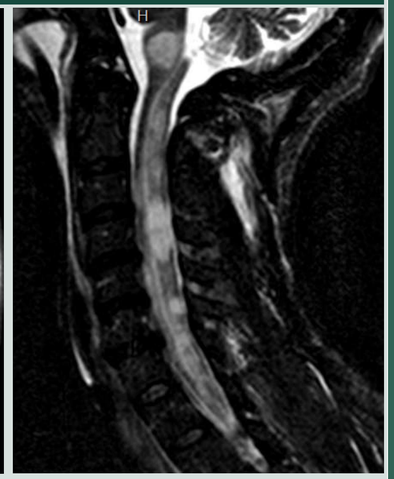

Figure 2: Large demyelinating lesion in the medulla, along with extensive new active lesions along cervical and thoracic spinal cord

RESULTS

- CSF studies: protein 62, oligoclonal bands 16, nucleated cells 3, NMO IgG negative, JCV PCR negative
- Serum labs: oligoclonal bands 10, NMO IgG negative
- Finally stabilized with another round of steroids and 5 more sessions of plasmapheresis
- Course of stay was further complicated by sepsis and then pulmonary embolism
- Patient was then started on ocrelizumab and she finally went to rehabilitation after 2 months of hospital stay. Has been slowly gaining strength and mobility.

CONCLUSIONS

- Number of reports emerging about relapses following fingolimod withdrawal. Upon literature review, our case seems to be one of the most severe reported.
- Rebound after withdrawal is well known with natalizumab withdrawal, but this has to be well characterized with fingolimod.
- Predisposing factors, timeline of relapse after discontinuation are yet to be elucidated in addition to preventive strategies and timely treatment, as this populations seems to respond poorly to steroids.

REFERENCES

- Cohen JA, Khatri B, Barkhof F, et al. Long-term (up to 4.5 years) treatment with fingolimod in multiple sclerosis: results from the extension of the randomised TRANSFORMS study. *Journal of Neurology, Neurosurgery, and Psychiatry*. 2016;87(5):468-475
- Hatcher SE, Waubant E, Nourbakhsh B, Crabtree-Hartman E, Graves JS. Rebound Syndrome in Patients With Multiple Sclerosis After Cessation of Fingolimod Treatment. *JAMA Neurol.* 2016;73(7):790–794