SARS-CoV-2 Related Encephalitis: MRI Pattern of the Olfactory Tract Involvement

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A 96-year-old female patient was admitted to the Emergency Room with generalized epileptic seizures and fever followed by left hemiparesis. Two days before admission she started with anosmia, dysgeusia [ref1] and behavioral dysexecutive syndrome. No respiratory symptoms were present or reported. Whereas nasopharyngeal SARS-CoV-2 RT-PCR was negative, chest CT-scan showed several lung areas of ground glass opacity and intralobular cross-links, suggestive of SARS-CoV-2 infection [ref2]. CSF analysis yielded 8 leukocytes/mm3 (75% polymorphonuclear neutrophilic cells) and was negative for SARS-CoV-2 PCR. Brain MRI revealed hyperintensity of the olfactory tracts on T2 FLAIR and diffusion-weighted imaging (Figure 1). Ten days after the admission, SARS-CoV-2 serology returned positive, thus supporting a SARS-CoV-2 related encephalitis.

### Appendix 1. Authors

<table>
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Teaching Slides-http://links.lww.com/WNL/B266

References:

Figure 1. Neuroimaging of SARS-CoV-2 related encephalitis.

**FLAIR sequences (panel A and B)** demonstrated bilateral cortical hyperintensity involving predominantly the rectus gyrus (1) overlying the olfactory tract and olfactory bulb, the anterior cingulate gyrus (2), polar part of the first frontal gyrus (3), and slight involvement of the piriform cortex (4), amygdala (5) and anterior hippocampus (6). No contrast enhancement was observed on post-gadolinium T1 sequences (panel C). Restricted diffusion was noted in the frontal gyrus (Panel D : DWI, Panel E : ADC). Chest CT showed areas of ground glass opacity in both lungs, predominantly in the middle lobe (Panel F)