Herpes Simplex Encephalitis
Does Interferon care?

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Introduction

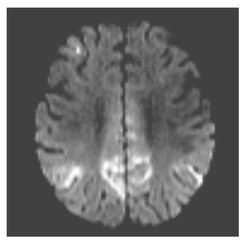
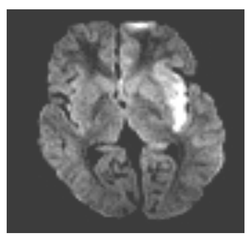
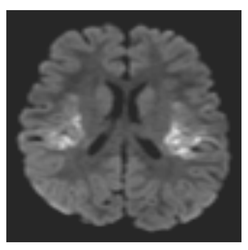
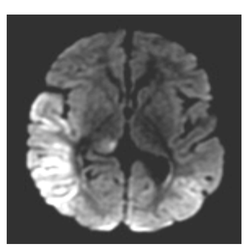
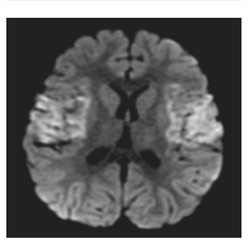
Herpes simplex encephalitis (HSE) is an acute, life-threatening disease, requiring prompt intervention. Defects of the TLR3-interferon (IFN) axis in the antiviral innate immune response against HSV-1 and defects of some genes of the TLR3 pathway (*TLR3*, *UNC93B1*, *TRAF3, TRIF, TBK1*) probably play an important role in HSE pathogenesis.

Methods

Descriptive study between January 2007 and December 2012. HSV-1 was detected by PCR from CSF samples. PBMC and fibroblasts were studied for their IFN responses to TLR3, after stimulations of poly(I:C), that is thought to be TLR3-dependent and virus stimulations. Coding exons of the known HSE-associated genes were sequenced.

Results n = 6

ALPHA INTERFERON 2B 10 MILION IU SUBCUTANEOUS

Patient 1 **8M, ♂** Acyclovir started on D3 IFN started on D18		IFN was **stopped** 7 days later for bycitopenia (Hb 6,3 g/dL, Neutrophils 450 mcL)	5,5 years follow-up	Severe global Developmental Delay	Started IFN **after** D7 Tetraparesis and cognitive delay
Patient 2 **7M,♀** Acyclovir started on D2 **IFN started on D3**			3 years follow-up	**NO SEQUELAE**	
Patient 3 **11Y, ♂** Acyclovir started on D3 **IFN started on D5**			2,3 years follow-up	Minor behavior disorder	Lower tolerance for frustration **No motor or cognitive dysfunction.**
Patient 4 **20M, ♀** Acyclovir started on D3 **IFN started on D5**			2,3 years follow-up	Moderate motor deficit	Right sided hemiparesis with pyramidal signs **No cognitive deficits**
Patient 5 **12M, ♂** Acyclovir started on D2 **IFN started on D3**			2 years follow-up	Epilepsy Not severe	**No motor deficits** **Cognitive function below average**
Patient 6 **11M, ♀** Acyclovir started on D7 **IFN started on D7**			1 year follow-up	Epilepsy Not severe	**No motor deficits**

Heretofore functional studies were normal EXCEPT for Patient 3 whose fibroblasts displayed impaired IFN-lambda production after stimulations of poly(I:C). No mutation was found in the sequenced coding exons of *UNC93B1*, *TLR3* and *TRAF3*.

Conclusion

- None of the 5 patients who started IFN until the 7th day of illness had severe motor or cognitive sequelae.
- Only patient 1, who started IFN after the 7th day of illness, had the classic pattern of HSV encephalitis motor and cognitive sequelae
- In spite of the small size of the sample studied, our results suggest that IFN theatment should be considered in patients suffering from HSE.

References

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