

Title: Downregulation of CD47 and CD200 in patients with focal cortical dysplasia type IIb and tuberous sclerosis complex

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### **What is the topic?**

Focal cortical dysplasia type IIb (FCD IIb) and tuberous sclerosis complex (TSC) in children are characterized by epilepsy. One reason for generation of seizures in these conditions is increased inflammation in the brain which is mediated by certain cells known as microglia and macrophages. CD47 and CD200 are two proteins that act through their receptors SIRP- $\alpha$  and CD200R respectively, to inhibit inflammation in the brain. In this paper, the scientists examined the levels of CD47/SIRP- $\alpha$  and CD200/CD200R in brain tissue from patients with FCD IIb and TSC, and compared it to tissue from control subjects.

### **What did the researchers hope to learn?**

By looking at levels of CD47/SIRP- $\alpha$  and CD200/CD200R in brain tissue from patients with FCD IIb and TSC, the scientists hoped to learn whether alterations in these proteins can contribute to seizures.

### **Who was studied?**

12 subjects with FCD IIb, 13 with TSC and 6 control subjects were studied.

### **How was the study conducted?**

Epileptogenic tissue was obtained from all subjects using magnetic resonance imaging (MRI). This was also confirmed later by neuropathology.

### **What did the researchers find?**

The scientists found reduced levels of CD47/SIRP- $\alpha$  and CD200 proteins in brain tissue from individuals with FCD IIb and TSC, while no changes in CD200R expression were found.

### **What were the limitations of the study?**

There is a shortage of studies like this one, where tissue from subjects with FCD IIb and TSC are studied. Hence, it is difficult to place the results of this study in the larger realm. It is also necessary to understand how exactly CD47/SIRP- $\alpha$  and CD200/CD200R cause inflammation.

### **What do the results mean for you?**

Reduced levels of CD47/SIRP- $\alpha$  and CD200 in tissue from patients with FCD IIb and TSC may contribute to inflammation and subsequent seizures. Studying this in greater detail and developing therapies to increase their levels may be beneficial in FCD IIb and TSC.

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TSC Research summaries

*This summary was written by Sloka Iyengar, PhD- a neuroscientist and science writer based in New York (May 2016).*