Title page

**Prenatal diagnosis and intervention improve** **neurodevelopmental and epileptic outcomes in children with tuberous sclerosis complex: A large retrospective cohort study**

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**ABSTRACT**

**Objectives**

To assess whether prenatal diagnosis and early intervention are beneficial for neurodevelopment and prognosis of epilepsy in individuals with tuberous sclerosis, which would be a major disease burden for TSC individuals.

**Methods**

This retrospective study was derived from a single-center TSC-specific cohort. We enrolled 273 individuals with definite TSC who completed *TSC1/TSC2* genetic testing and were followed up to 2 years of age. We compared prenatally diagnosed individuals (PreDI) to postnatally diagnosed individuals (PostDI) and PreDI receiving both sirolimus and vigabatrin prophylactic intervention (PI) to individuals without intervention (no-PI) in terms of epilepsy and neurodevelopment to assess the benefits of early attention and intervention.

**Results**

The rate of epilepsy occurrence was significantly lower in the PreDI group than in the PostDI group (*p=0.027*). In the PreDI group, the rate of epilepsy in the PI subgroup was significantly lower than that in the no-PI subgroup (*p=0.008*). The PreDI group showed significant improvements in cognitive, language, and motor development compared to the PostDI group and in the PI group compared to the no-PI group (*p< 0.05*).

**Conclusion**

Cardiac rhabdomyomas and/or intracranial lesions combined with *TSC1/TSC2* genetic testing is an appropriate and effective method for prenatal diagnosis. Early postnatal interventions can reduce the incidence of epilepsy and improve neurodevelopmental outcomes.