

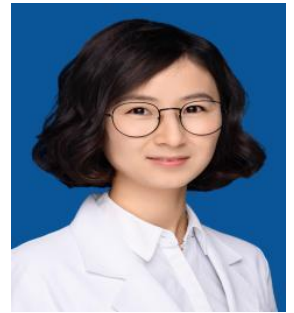
**Title:** The Effect of Antiseizure Medications on Bone Metabolism in Offspring and its Underlying Mechanism

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**Abstract:**

Many pregnant women diagnosed with epilepsy require the use of antiseizure medications (ASMs) throughout their pregnancy to control seizures, potentially exposing them to risks associated with drug therapy. It is well-documented that the administration of ASMs during pregnancy may elevate the likelihood of adverse outcomes for both the expectant mother and the developing fetus, including the occurrence of any congenital malformation. Hence, it is imperative for clinical treatment to carefully consider and balance the potential adverse effects of epilepsy and ASMs on pregnant women and their fetuses.

Choosing the appropriate ASMs during pregnancy is crucial. Some ASMs, like sodium valproate, can greatly increase the risk of fetal malformations and should be avoided during pregnancy. Furthermore, researchers have increasingly recognized that certain ASMs may result in aberrant bone metabolism in individuals, yet the underlying mechanism remains unclear. Additionally, the impact of ASMs on bone metabolism in the offspring of pregnant women with epilepsy (WWE) remains uncertain. Further research is needed to clarify this.

In our study, we focused on bone metabolism-related indicators, and first compared the growth outcomes of the offspring of 83 epileptic parturients and 249 ordinary parturients through retrospective analysis. We found that the bone metabolism of the offspring of WWE was decreased, exhibited shortened femoral length. This phenomenon was especially pronounced in offspring of WWE who were prescribed multiple ASMs.

Next, we conducted animal experiments and randomly divided 24 female C57BL/6 mice into distinct treatment groups (n = 6): levetiracetam, lamotrigine, carbamazepine and saline after confirming pregnancy. It was further confirmed that the most commonly used ASMs during clinical pregnancy, levetiracetam and lamotrigine, would impact bone metabolism in offspring, exhibited a decreased in femoral length, ossification length, and alterations in bone turnover markers. And this result, to a certain extent, provide a theoretical basis for clinicians to choose ASMs during pregnancy, and suggest that the clinical application of the corresponding drugs need to evaluate and monitor the corresponding maternal bone transformation markers and fetal growth in utero.

**Biography:**

Jiajia Fang, born on June 12, 1986, is a female medical professional currently employed at The Fourth Affiliated Hospital of Zhejiang University School of Medicine. Her special interests include Neurology, Epilepsy Disease, and Functional MRI.

Jiajia completed her undergraduate studies at the West China School of Medicine, Sichuan University, from 2004 to 2009. She continued her education at the same institution, earning both her master's and doctoral degrees between 2009 and 2012.

She began her professional career in the Department of Neurology at the Fourth Affiliated Hospital of Zhejiang University School of Medicine as a Resident from August 2012 to August 2014. She then served as a Fellow from September 2014 to December 2018 and has been working as an Attending Neurologist since December 2018.

Jiajia is a youth member of the Youth Committee of the Chinese Anti-Epilepsy Association and a member of the Rare Diseases Group in the Neurology Branch of the Zhejiang Medical Association.

She has published several research papers, including:

1. Fu Y, Zhang J, Cao Y, Ye L, Zheng R, Li Q, Shen B, Shi Y, Cao J, Fang J\*. Recognition memory deficits detected through eye-tracking in well-controlled children with self-limited epilepsy with centrotemporal spikes. *Epilepsia*, April 2024; 65(4):1128-1140.
2. Chen J, Wang Y, Chen C, Zhang Q, Wang S, Wang Y, Fang J\*, Wang Y\*. Activation of medial septum cholinergic neurons restores cognitive function in temporal lobe epilepsy. *Neural Regen Res*, November 2023; 18(11):2459-2465.
3. Zhang Z, Zhang J, Fu Y, Cao Y, Wang S, Fang J\*. Driving status and attitudes of patients with epilepsy holding a driving license in eastern China. *Epilepsy Behav*, May 2023; 142:109178.
4. Li Q, Cao Y, Zhang J, Fu Y, Shen B, Wang S, Fang J\*. Pregnancy-related knowledge in women with epilepsy in childbearing age: A pilot questionnaire survey from China. *Brain Behav*, February 2024; 14(2)
5. Cao Y, Jiang L, Zhang J, Fu Y, Li Q, Fu W, Zhu J, Xiang X, Zhao G, Kong D, Chen X, Fang J\*. A fast and non-invasive artificial intelligence olfactory-like system that aids diagnosis of Parkinson's disease. *Eur J Neurol*, March 2024; 31(3)