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Is vagal-nerve stimulation safe during pregnancy? A mini review

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Background: Vagus-nerve stimulation (VNS) is the most common neuromodulation technique and has been approved by the FDA for treating refractory epilepsy and refractory depression. Although VNS has been used for nearly 32 years, the impact of VNS on the safety of pregnant women and neonate remains to be evaluated.

Methods: We first analyze the relationship between the vagus nerve and the reproductive system (ovary and uterus) and then determine whether harm is inflicted to the reproductive system, thereby affecting the pregnancy. A comprehensive literature search is performed on PubMed/MEDLINE database, Web of Science, and Scopus. Ten articles are included in the study, and 44 pregnancies of 38 patients are analyzed.

Results: The vagus nerve is connected with the reproductive system, but VNS may have little effect on pregnancy. We analyze 10 articles (38 patients with 44 pregnancies) about VNS complications during pregnancy. Two of the 44 pregnancies (2/44, 4.5 %) are miscarriages, and two pregnancies have fetuses with congenital malformations (2/42, 4.8 %), which could also be attributed to polytherapy with antiepileptic drugs. The rest of the pregnant women have no postpartum complications, and their fetuses are healthy.

Conclusions: VNS may be relatively safe and effective for the fetus and mother during pregnancy, and turning off VNS during pregnancy is unnecessary. However, owing to the small sample size and short follow-up time in the present study, further research is needed.