Paroxysmal supraventricular tachycardia (PSVT) is the most common symptomatic arrhythmia during pregnancy. Although PSVT is usually considered transient and harmless, its association with maternal and fetal outcomes during pregnancy are unknown.

In this study, we used a national population cohort to measure the associations between PSVT events during pregnancy and maternal or fetal outcomes and to evaluate the associations between prior ablation of PSVT and those outcomes. This study was approved by the Institutional Review Board of Chang Gung Memorial Hospital, Taiwan.

We obtained records of all pregnancies in Taiwan between 2001 and 2012 from a national insurance database. Gestational age, birth weight, Apgar score, and fetal outcomes were obtained from Taiwan’s national birth registry to which obstetricians are required by law to report fetal and maternal information. Mothers who were <15 or >44 years of age or who had had congenital heart disease, a gap between deliveries that was <6 months or >20 years, or multiparities were excluded. Informed consent was waived because of anonymous data.

Symptomatic PSVT was defined as an emergency department visit or admission with a primary diagnosis of International Classification of Diseases, Ninth Revision code 427.0. A female admission diagnosis of PSVT and an International Classification of Diseases, Ninth Revision procedure code of 37.34 defined a PSVT case with catheter ablation.

Maternal adverse outcomes, based on the Centers for Disease Control and Prevention’s severe maternal morbidity composite outcome, included death within 30 days of delivery, severe maternal morbidity, cesarean delivery, induced labor, prolonged hospital stay, and pregnancy-related complications. The Centers for Disease Control and Prevention’s fetal adverse outcomes included poor or excessive fetal growth, fetal stress, fetal abnormalities, low birth weight, and stillbirth. We used SAS, version 9.4 (SAS Institute Inc) to calculate odds ratios with 95% confidence intervals using logistic regression for all exposure groups and for each outcome.

We analyzed data from 2,350,328 women between 2001 and 2012 categorized into 2 groups. Subjects in the reference group (2,349,559 women) had no PSVT during pregnancy, and those in the PSVT group (769 women) had PSVT during pregnancy. The 2 groups had similar mean age (30 years), race, place of residence, income, occupation, pregnancy calendar years, and Charlson comorbidity index.

In comparison with reference subjects, PSVT subjects had a higher adjusted odds for severe maternal morbidity, cesarean delivery, low birth weight, preterm labor, fetal stress, and obvious fetal abnormalities. There was no difference between the 2 groups for pregnancy-related hypertension, preeclampsia, hemorrhages, gestational diabetes, chorioamnionitis, and stillbirth (Figure).
Outcomes Associated With PSVT During Pregnancy

Circulation. 2017;135:616–618. DOI: 10.1161/CIRCULATIONAHA.116.025064

February 7, 2017 617

CORRESPONDENCE

All pregnant women with prior PSVT (3235 women) were then divided into those with prior ablation (1195 women) and without ablation (2040 women). The ablation group had a lower incidence of PSVT (26 PSVTs, 2.2%) during pregnancy than the observation group (176 PSVTs, 8.6%) (P<0.001). There was no difference between the groups for obstetric and fetal outcomes in comparison with women without any PSVT history.

In this population-based cohort study, we have discovered 2 novel findings: (1) PSVT events during pregnancy were associated with worse obstetric and fetal outcomes, and (2) among women with a PSVT history, prior catheter ablations were associated with fewer recurrent PSVTs, although the overall incidence of PSVT in both groups was very low and there was no difference between the groups in obstetric and fetal outcomes.

After minimizing the confounding effects of structural heart disease of the mothers, the etiology of PSVT or arrhythmia-related treatment might explain part of these findings, but here we offer a more plausible explanation. The PSVT symptoms were severe enough to cause more frequent emergency department visits or admissions to obstetric units. These admissions might have consequently led to more intensive fetal monitoring, easier diagnosis of fetal stress, earlier delivery, and lower birth weight and, hence, the fetal outcomes that we have identified in this study. However, there may be other reasons that are not clear from our analysis.

The lower incidence of PSVT observed in women with prior ablation was not associated with improved maternal or fetal outcomes. Thus, based on our data, PSVT ablation before ablation before pregnancy solely for the purpose of making pregnancy safer cannot be recommended. However, prepregnancy ablation will reduce episodes of PSVT during pregnancy, which may be consideration for some.

This study has the following limitations. First, it did not include information on the use of drugs during the pregnancies. The potential effect of medication on outcomes, therefore, was unclear. Second, it did not consider some cardiomyopathies that might be clinically important, although patients with any congenital heart condition were excluded from this study.

In conclusion, PSVT during pregnancy is not as benign as is generally thought. Pregnant women, especially those with a PSVT history, should be aware of the risk of adverse outcomes for both mothers and newborns. However, catheter ablations for women with previous PSVT before pregnancy were not associated with improved maternal or fetal outcomes; therefore, routine PSVT catheter ablation to improve pregnancy-related outcomes cannot be recommended based on our data.

SOURCES OF FUNDING

This work was funded by Chang Gung Memorial Hospital (project CMRPG3F0851).

DISCLOSURES

None.

AFFILIATIONS

From Cardiovascular Department, Chang Gung Memorial Hospital, Linkou; College of Medicine, Chang Gung University, Taoyuan, Taiwan (S.-H.C., M.-S.W., W.-J.C., Y.-H.Y.); Division of Rheumatology, Orthopaedics and Dermatology, School of Medicine, University of Nottingham, UK (C.-F.K., W.Z.); Division of Rheumatology, Allergy and Immunology, Chang Gung Memorial Hospital, Taoyuan, Taiwan (C.-F.K., K.-H.Y., S.-F.L.); Division of Paediatric Neurology, Chang Gung Memorial Hospital, Linkou, Taiwan (I.-J.C.); Department of Public Health, College of Medicine and Biostatistics Core Laboratory, Molecular Medicine Research Centre, Chang Gung University, Taoyuan, Taiwan (L.-C.S.); and Office for Big Data Research, Chang Gung Memorial Hospital, Taoyuan, Taiwan (M.-J.C.).

FOOTNOTES

Circulation is available at http://circ.ahajournals.org.

REFERENCES


Outcomes Associated With Paroxysmal Supraventricular Tachycardia During Pregnancy
Shang-Hung Chang, Chang-Fu Kuo, I-Jun Chou, Lai-Chu See, Kuang-Hui Yu, Shue-Fen Luo,
Meng-Jiun Chiou, Weiya Zhang, Michael Doherty, Ming-Shien Wen, Wei-Jan Chen and
Yung-Hsin Yeh

*Circulation*. 2017;135:616-618
doi: 10.1161/CIRCULATIONAHA.116.025064
*Circulation* is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2017 American Heart Association, Inc. All rights reserved.
Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the
World Wide Web at:
http://circ.ahajournals.org/content/135/6/616

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published
in *Circulation* can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial
Office. Once the online version of the published article for which permission is being requested is located,
click Request Permissions in the middle column of the Web page under Services. Further information about
this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to *Circulation* is online at:
http://circ.ahajournals.org//subscriptions/