

The risk of intracranial meningioma requiring surgical intervention among recent hormonal contraceptives users

Faculty Mentor

Dr. Winterstein

Biosketch

Sebastian Jugl is a second year Ph.D. student with Dr. Winterstein as his advisor. Sebastian received his Staatsexamen (pharmacy degree) in 2017, his pharmacy license in 2019, and joined the Department in Fall 2019. Since joining POP, Sebastian has been engaged in studies focusing on medical cannabis, women health issues, and cancer, and his interests lay mainly in the field of pharmacoepidemiology. Besides this, Sebastian is also an author for the German pharmacist association (DPhG) for whom he regularly publishes articles about clinical guidelines in the pharmacy.

Abstract

Background

Meningioma accounts for 36.4% of all primary brain and CNS tumors. The effect of sex hormones on the growth and recurrence of meningioma, in particular progesterone and progestins, remains controversial.

Objectives

To investigate the relationship between hormonal contraceptive (HC) exposure and risk for surgically treated intracranial meningioma (SIM) among women of childbearing age.

Methods

This case-control study utilized IBM MarketScan commercial claims data from 2005 to 2018. The study population included female patients 15-44 years old, with ≥ 2 years of continuous enrollment without diagnoses of brain, head/neck malignancies, and neurofibromatosis. Cases of SIM had a diagnosis of intracranial meningioma in combination with a related intracranial surgical intervention. Controls were matched in a ratio of 1:10 based on cohort entry date (± 30 d) and age (± 1 y) using risk set sampling. Exposure was assessed from cohort entry date until one year before the index date. Multivariate conditional logistic regression was used to estimate odds ratios (OR) while controlling for potential confounder.

Results

Among 13,540,092 women of childbearing age, we identified 1,900 cases of SIM. The final cohort included 20,900 patients. The mean age for cases was 33.6y (± 7.5 y). Women exposed to combined oral contraceptives (COC) or injectables had a 1.25-fold (95% CI 1.10-1.41), and 2.64-fold (95% CI 1.93-3.60) risk of SIM, compared to patients with no recent HC use. Progestin only pills users had a lower risk for SIM (OR:0.57, 95% CI 0.32-0.99), and injectable users had a higher risk for SIM (OR:2.11, 95% CI:1.53-2.93) compared to COC users.

Conclusion

In this study we found that women with recent exposure to injectables had a higher risk of SIM when compared to women with recent use of COC or no HC. Further studies with longer follow-up are warranted to validate our findings and evaluate the impact of progestin dose differences on the risk of SIM.