Impact of medically assisted procreation and pregnancy on breast and gynecologic cancer risk in women under 45: a real-world, propensity-matched analysis using the trinetx network

N° 1043

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Introduction

The potential oncologic risks associated with medically assisted procreation (MAP) remain a concern, particularly in young women undergoing hormonal stimulation. Although previous studies have suggested no significant increase in breast cancer (BC) risk after MAP, data remain limited for ovarian (OC) and endometrial (EC) cancers. Moreover, the protective role of pregnancy against BC is well established but less explored for other gynecologic malignancies. This study aimed to evaluate the risk of BC, OC, and EC in women under 45 undergoing MAP compared with women who had a delivery, and to assess the impact of pregnancy compared with nulliparity.

Methods and Materials

For this retrospective analysis we used real-world data from the TriNetX Global Collaborative Network. Two propensity-matched comparisons were performed: (1) MAP vs. a cohort of parous women undergoing mammographic screening (n=878 per group); (2) parous vs. nulliparous women undergoing mammographic screening (n=1,322 per group). Matching was performed on age, race, body mass index (BMI), genetic predisposition to malignancies, and previous oral contraceptive use. Outcomes included the incidence of BC, OC, and EC. Risk ratios (RR), odds ratios (OR), hazard ratios (HR), and cumulative incidence curves were calculated. The observation period extended up to 20 years.

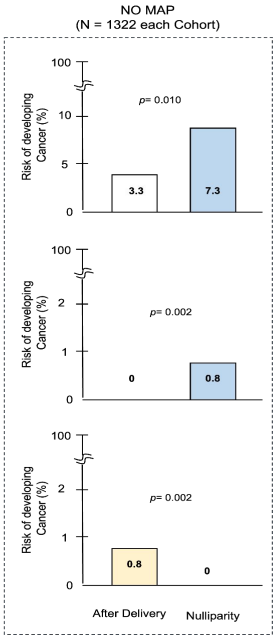
Results

In the first analysis, no significant difference was found in BC risk (3.6% vs. 4.3%; RR=0.84; HR=1.005; p=0.985). OC cases were absent in both cohorts. EC incidence was significantly higher in the MAP group, although the number of cases was low (1.1% vs. none; p=0.002). In the second analysis, parous women had a significantly lower BC incidence (3.3% vs. 7.3%; RR=0.45; HR=0.42; p=0.010). OC occurred only in nulliparous women (0.8% vs. none; p=0.002). Conversely, EC was higher in parous women (0.8% vs. none; p=0.002).









Conclusions

This real-world study suggests that MAP in women under 45 does not increase the risk of BC or OC compared with parous women. However, a possible increased risk of EC, although based on few cases, warrants attention. Moreover, pregnancy appears to confer a significant protective effect against BC and OC compared with nulliparity. Pending further long-term studies, these data support the oncologic safety of MAP for BC and OC, while highlighting the importance of individualized risk counseling regarding EC.

Acknowledgments

The authors would like to acknowledge TriNetX Global Collaborative Network for the valuable support in the development of this study. Its contribution to data analysis and methodological consultation was crucial in completing this work.

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