International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Shanmugam S et al. Int J Reprod Contracept Obstet Gynecol. 2023 Jun;12(6):1666-1669
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20231533

Original Research Article

Association of breast feeding in ovarian malignancy: is breastfeeding a boon? a single institutional experience

Subbiah Shanmugam*, Sathiyaseelan Balakrishnan

Department of Surgical Oncology, Government Royapettah Hospital, Kilpauk Medical College, Chennai, Tamil Nadu, India

Received: 25 March 2023
Revised: 29 April 2023
Accepted: 01 May 2023

***Correspondence:**
Dr. Subbiah Shanmugam,
E-mail: subbiahshanmugam67@gmail.com

ABSTRACT

Background: There are many risk factors which can attribute to ovarian cancer. Oral contraceptive pill (OCP) usage, salpingo-oophorectomy, and high parity are considered as protective factors for ovarian cancer. Lactation (breastfeeding), incomplete pregnancies, and sterilization may offer a weak protection against ovarian cancer. There are only few modifiable risk factors beyond oral contraceptive use exist. Hence identifying additional modifiable factors is needed to tailor prevention strategies.
Methods: In our institution, we analyzed 250 patients who underwent treatment for various malignancies from 2020 to 2022. Among those patients, 128 patients were treated for ovarian malignancy who were compared with 122 control patients (patients with malignancy other than ovarian cancer). We collected data of these patients from medical records. We analyzed the association of breast feeding, and the duration of breast feeding with ovarian malignancy.
Results: A total of 128 women with ovarian malignancy; mean (SD) age, 53.3 (7.7) years and 122 controls; mean (SD) age, 51.6 (8.0) years were included. Breastfeeding was associated with a 26.4% lower risk of invasive ovarian cancer in patients who breastfed their children for cumulative period of more than one year.
Conclusions: Breast feeding is associated with significant reduction in ovarian malignancy when the duration of breast feeding exceeds more than one year. Thus, encouraging breast feeding and increasing the duration of breast feeding may help in reducing the incidence of ovarian malignancy.

Keywords: Ovarian cancer, Breastfeeding, Contraception

INTRODUCTION

According to American cancer society and National cancer institute, the incidence of ovarian cancer would be around 19,880 in 2022. Around 12,810 women would die due to ovarian cancer in 2022. Among ovarian cancer, 90% belongs to epithelial ovarian cancer (EOC).[1] The overall survival rate of ovarian cancer is around 49%.[2] During ovulation process, there might be a repeated damage to ovarian surface epithelium due to ovulation. The high gonadotropin levels during ovulation results in proliferation of surface epithelium.[3] Breastfeeding helps in delaying the ovulation and also inhibits the release of gonadotropins, which may contribute in development of ovarian cancer.[4] Many research and studies have investigated the association between breastfeeding and ovarian cancer risk, some of them showing a substantial reduction in risk while the others showing no association.[5]

METHODS

In this study we collected data of carcinoma ovary patients who underwent treatment in centre for Oncology, Government Royapettah Hospital, Chennai during the period between January 2020 to December 2022 from medical records and compared that with control patients.

Selection criteria

All ovarian cancer patients with from 18 years to 70 years of age irrespective of stage and treatment were included in this study. All patients other than ovarian malignancy from 18 years to 70 years were included in control group. Patients with previous breast surgeries for malignant condition and patients with endocrine abnormalities related to pituitary were excluded from the study.

We analyzed the association of breast feeding in terms with ovarian malignancy. We categorized patients into four groups. Patients who had not breast fed their children (includes nulliparous women's also), patients who breastfed up to 6 months in total, patients who breastfed their children for 6 months to 1 year and patients who breast fed for more than one year. Statistical analysis was done through Chi-square test.

RESULTS

The mean age of the study population was found to be 52.49 years with a standard deviation of 7.78 years. The minimum and maximum ages were found to be 29 and 70 years respectively. Among cases, the mean age was found to be 53.31 years with a standard deviation of 7.73 years. The minimum and maximum ages were found to be 34 and 69 years respectively. Among controls, the mean age was found to be 51.63 years with a standard deviation of 8.06 years. The minimum and maximum ages were 29 and 70 years respectively. The distribution of age between cases and controls did not differ significantly with each other with a p value of 0.088.

Ovarian cancer stages

Among 128 ovarian cancer patients, majority were in stage III, 98 (76.6%) followed by stage I, 18 (14.1%). About 12 (9.4%) patients were in stage IV ovarian cancer. The number of children borne by ovarian cancer patients is given in (Table 1).

Table 1: Number of children borne by ovarian cancer patients (n=128).

Number of children	N	%
0	11	8.6
1	18	14.1
2	44	34.4
3	34	26.6
4	20	15.6
5	1	0.8

Association between breast feeding and ovarian carcinoma

Among 250 patients, breast feeding was absent in 56 (22.4%). In cases, breast feeding was absent in 29 (51.8%) patients and in controls, it was found to be absent in 27 (48.2%). There were no significant differences between cases and controls with a p value of 0.921.

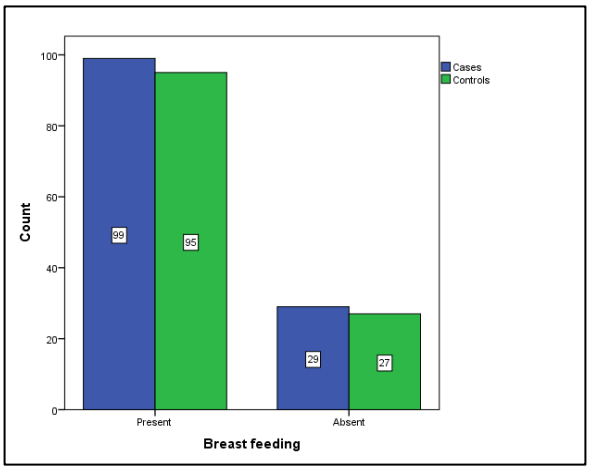

Figure 1: Association between breast feeding and ovarian carcinoma.

Breast feeding for less than 6 months was reported in 110 study participants. Among them 62 (56.4%) were seen in ovarian carcinoma patients and 48 (43.6%) were seen in controls. There were no significant differences between them with a p value of 0.148.

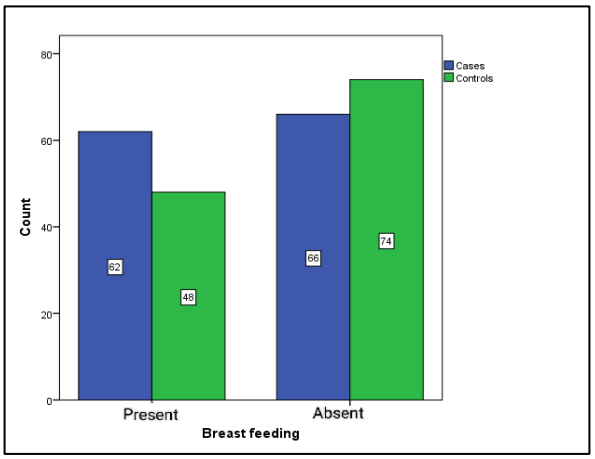

Figure 2: Association between breast feeding less than 6 months and ovarian carcinoma.

Breast feeding between 6 months to 1 year was reported among 111 study participants. Among them 65 (58.6%) were seen in ovarian carcinoma patients and 46 (41.4%) were seen in controls with a p value of 0.038. Breast feeding for more than 1 year was reported among 87 study participants. Among them 32 (36.8%) were seen in ovarian carcinoma patients and 55 (63.2%) were seen in controls. There were significant differences between them with a p value of 0.001. The incidence of ovarian carcinoma was found to be significantly lower in those who had breastfed their children for more than 1 year.

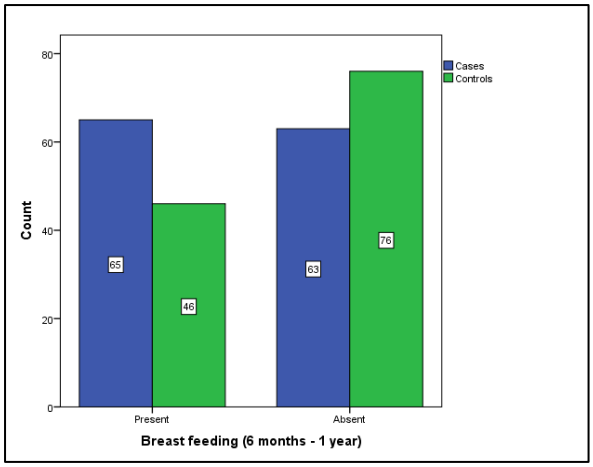

Figure 3: Association between breast feeding between 6 months to 1 year and ovarian carcinoma.

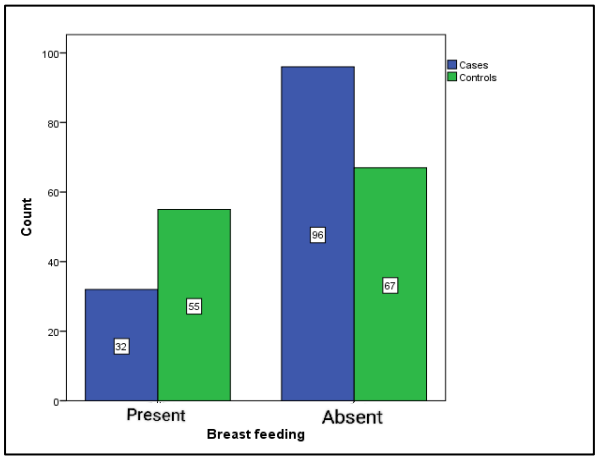

Figure 4: Association between breast feeding for more than 1 year and ovarian carcinoma.

DISCUSSION

In our study, patients who breastfed their children for more than one year had significantly less incidence of ovarian malignancy when compared with control population. Recent literature quotes breastfeeding as an important modifiable risk factor that might significantly reduce the risk of ovarian cancer and a meta-analysis of nine case-control studies shows a 30% decrease in risk in women who breastfed their child.[6,7] In the study population, among the people who breastfed their children for more one year, 36.8 percent belongs to the case group (patients with ovarian malignancy) and 63.2 percent belongs to control group. There was a significant reduction of ovarian malignancy in patients who breastfed their children for more than one year and the difference was about 26.4 percent when compared with control group. In patients who breast fed their children for less than one year or no breastfeeding, there was no statistically significant difference between the cases and control groups. Some of the studies show, for a single breastfeeding episode, with mean breastfeeding duration of less than 3 months, there was a risk reduction of 18 percent.[5] The World Health Organization (WHO) recommends exclusive breastfeeding for at least first 6 months and continued breastfeeding with complementary foods for 2 or more years.[8,9] From our study we strongly recommend our population to breastfeed their children for more than one year. Breastfeeding delays the ovulation process and a prolongs the period of amenorrhea.[4] During breastfeeding, the high prolactin levels suppresses the ovulation, which in turn prevents the secretion of follicle-stimulating hormone and luteinizing hormone (gonadotropins).[10] During ovulation, the ovarian epithelium undergoes recurrent damage as well as repair and also get exposed to estrogen-rich follicular fluid.[11] This continuous proliferation of epithelial cells forms the basis of the theory of incessant ovulation. This proposes that there is a high chance of spontaneous mutations in women who are all having a greater number of ovulation and thereby increasing the risk of ovarian malignancy.[11,12] Thus the breastfeeding may protect a woman from ovarian cancer. The other hypothesis suggests that high levels of follicle stimulating hormone and luteinizing hormone increases the risk of epithelial ovarian cancer through increased estrogen stimulation, which in turn promotes the proliferation of ovarian surface epithelium and increases the probability for malignant transformation.[13] Thus, based on all these hypotheses, prolonged breastfeeding can reduce the risk of epithelial ovarian cancer through their effects on ovulation and gonadotropin concentrations.

Limitations

Current study has some limitations, including the potential for differential self-reporting of breastfeeding status, and there might be a possibility of recall bias about the duration of breastfeeding which could distort the magnitude of association. This could be a possible reason for our results in patients who breastfed their children for less than one year and their association with ovarian malignancy was not well established in our study.

CONCLUSION

Breastfeeding is one of the potential modifiable risk factors for ovarian malignancy along with breast cancer. With prolonged breast feeding it might be possible to reduce the ovarian malignancy by one fourth. It may help to reduce the incidence of ovarian malignancy and it's potential mortality rate in general population. Awarness among public about the benefit of breast feeding in reducing the incidence of ovarian cancer should be ensured. Investing in such endeavour may be a low-cost high impact intervention, which can indirectly reduce the burden of health care system in developing countries.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. DeVita VT, Rosenberg SA, Lawrence TS. Cancer principles & practice of oncology. 11th ed. USA: Wolters Kluwer; 2019.
2. Cancer. Available at: cancer.org/cancer/ovarian-cancer/detection-diagnosis-staging/survival-rates. Accessed on 20 November 2022.
3. Brewer MA, Johnson K, Follen M, Gershenson D, Bast R. Prevention of Ovarian Cancer: Intraepithelial Neoplasia. Clin Cancer Res. 2003;9:20-30.
4. Su D, Pasalich M, Lee AH, Binns CW. Ovarian cancer risk is reduced by prolonged lactation: a case-control study in southern China. Am J Clin Nutr. 2013;97(2): 354-9.
5. Babic A, Sasamoto N, Rosner BA, Tworoger SS, Jordan SJ, Risch HA, et al. Association Between Breastfeeding and Ovarian Cancer Risk. JAMA Oncol. 2020;6(6):e200421.
6. Cramer DW. The epidemiology of endometrial and ovarian cancer. Hematol Oncol Clin North Am. 2012; 26:1-12.
   Ip S, Chung M, Raman G, Trikalinos TA, Lau J. A summary of the Agency for Healthcare Research and Quality's evidence report on breastfeeding in developed countries. Breastfeed Med. 2009;4(1):S17-30.
7. Diet, nutrition, physical activity and cancer: a global perspective. Available at: https://www.iccp-portal.org/. Accessed on 20 November 2022.
8. Maternal, newborn, child and adolescent health. Available at: https://www.who.int/maternalchild_adolescent/topics/child/nutrition/breastfeeding/en. Accessed on 20 November 2022.
9. Trikalinos TA, Lau J. History of breast feeding and risk of incident endometriosis: prospective cohort study BMJ. 2017;5:358.
10. Jordan SJ, Cushing-Haugen KL, Wicklund KG, Doherty JA, Rossing MA. Breast-feeding and risk of epithelial ovarian cancer. Cancer Causes Control. 2012;23:919-27.
11. Food, nutrition, physical activity, and the prevention of cancer: a global perspective. Available at: https://discovery.ucl.ac.uk/. Accessed on 20 November 2022.
12. Chiaffarino F, Pelucchi C, Negri E, Parazzini F, Franceschi S, Talamini R, et al. Breastfeeding and the risk of epithelial ovarian cancer in an Italian population. Gynecol Oncol. 2005;98:304-8.

Cite this article as: Shanmugam S, Balakrishnan S. Association of breast feeding in ovarian malignancy: is breastfeeding a boon? a single institutional experience. Int J Reprod Contracept Obstet Gynecol 2023;12:1666-9.