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Prophylactic Bilateral Salpingo-oophorectomy with Hysterectomy: A Rare Nigerian Experience

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Abstract

Background: *Prophylactic (or risk-reducing) bilateral salpingo-oophorectomy (PBSO) is one of the known preventive modalities against epithelial ovarian, fallopian tube and breast cancers in high risk individuals. These high risk individuals include women with mutations in BRCA1 and/or BRCA2 genes. The practice of PBSO is still highly few and far between in Nigeria due to lack of genetic screening for mutation carriers.*

Case presentation: *A 45-year-old Nigerian woman with four living children presented to the gynecology outpatient clinic on self-referral following a positive screening result for BRCA 1 gene mutation She had completed her desired family size. She was asymptomatic and had family history of ovarian cancer but no family history of breast, colorectal or endometrial cancer. She has a history of menorrhagia but does not consider it clinically significant. General examination showed normal findings and abdomino-pelvic ultrasound scan showed multiple uterine leiomyomata and normal adnexae. Pap smear was negative for intra-epithelial lesion or malignancy. She was counseled on the findings and subsequently had PBSO with total abdominal hysterectomy with unremarkable post-operative condition. The histology showed multiple uterine leiomyomata with normal ovaries, fallopian tubes and cervix.*

Conclusion: *Given our peculiarity, we have reported a rare experience of PBSO for a high risk woman with BRCA1 mutation carrier who had completed childbearing. Routine genetic screening for BRCA1 or BRCA2 mutation carriers are lacking in Nigeria. Gynecologists practicing in low-and middle income settings should be encouraged to make all options available for patients who could potentially be at high risk and offer PBSO when and where appropriate either as a stand-alone procedure or in conjunction with hysterectomy.*

Keywords: *Prophylactic (or risk-reducing) bilateral salpingo-oophorectomy; BRCA1; BRCA2, mutation; hysterectomy.*

Introduction

Prophylactic (or risk-reducing) bilateral salpingo-oophorectomy (PBSO) refers to the surgical removal of both fallopian tubes and ovaries in women not thought to have cancer before the surgical procedure, but who have a high lifetime risk[1]. This includes women with confirmed mutations in BRCA1 and/or BRCA2 genes [1]. Studies have shown that the presence of deleterious mutations in the BRCA1 or BRCA2 genes increases the risk of development of breast and high-grade serous cancer (HGSC) [1, 2]. In one recent European study, the breast or ovarian cancer incidences were reported to be 44% in BRCA1 mutation carriers and 17% in

BRCA2 mutation carriers [2]. One recent Cochrane review on PBSO concluded that PBSO in women with BRCA1 or BRCA2 mutations improves overall survival and reduces the number of HGSC and breast cancer deaths especially in women with BRCA1 mutations [1]. Unfortunately, testing for BRCA1 and BRCA2 gene mutation carriers is not routinely offered to women in Nigerian hospitals. Therefore performing PBSO for BRCA1 mutation carrier is a few and far between experiences in a Nigerian population. Here we report the rare case of a patient who had PBSO for BRCA1 mutation carrier after completing childbearing in a Nigerian tertiary hospital.

Case Presentation

A 45-year-old multipara with four living children presented to the gynecology outpatient clinic on self-referral following a positive screening result for BRCA 1 gene mutation. She was asymptomatic and had recently travelled to the United States of America to tend to the elder sister who was diagnosed with ovarian cancer. She had completed her desired family size. The BRCA gene testing was done abroad during this visit. There was no family history of breast, colorectal or endometrial cancer. She had a history of menorrhagia but does not consider it clinically significant.

General examination showed normal findings. Pelvic examination revealed a bulky uterus of about 12 weeks. The cervix was apparently healthy and had no lesions. Abdomino-pelvic ultrasound scan done showed multiple uterine leiomyomata with normal adnexal findings. Pap smear done was negative for intra-epithelial lesion or malignancy. She was counseled on the findings and subsequently opted for PBSO with total abdominal hysterectomy. She had total abdominal hysterectomy with PBSO. The post-operative condition was generally unremarkable and she was subsequently discharged after 48hours.

She was seen at 2 and 6 weeks after surgery and had no complaints. The histology showed multiple uterine leiomyomata with normal ovaries, fallopian tubes and cervix. She was counseled on the findings subsequently and discharged for follow-up care.

Discussion

Mutations in BRCA1 and BRCA2 genes confer a risk to the development of epithelial ovarian cancer and breast cancer. We report a rare case of a 45-year-old woman who tested positive for BRCA1 mutation in the United States of America and subsequently presented to our facility for PBSO. She opted to get tested to determine her status and inherited familial risk while tending to the elder sister who was recently diagnosed with ovarian cancer.

Females with BRCA1 or BRCA2 mutations typically have a 60-85% cumulative lifetime risk of invasive breast cancer and a 15-65% cumulative lifetime risk of epithelial ovarian cancer [3]. PBSO has evolved as a strategic option for reducing the risk of epithelial ovarian, fallopian tube and breast cancer in women with the highest possibility of developing this malignancy. It is a procedure usually recommended to BRCA1 or BRCA2 carriers after completion of childbearing [4]. Up-to-date expert guidelines recommend that women with BRCA mutations should be offered PBSO between the ages of 35 and 40 years or after childbearing is completed [1, 2]. Our patient was a 45-year-old woman who screened positive to BRCA1 mutation and she also has completed childbearing.

PBSO can work due to the following reasons. Ovaries secrete the hormones that control the reproductive cycle. Surgical removal of ovaries will substantially reduce the levels of the hormones estrogen and progesterone that circulate in the body [5]. Bilateral salpingo-oophorectomy can pause or ameliorate breast cancers that require these hormones to grow [6]. Although we did not perform mastectomy for our patient, bilateral salpingectomy was also performed because some experts have shown that fallopian tubes may be the origin of many of the aforementioned gynecological cancers in mutation carriers. However, removing only the fallopian tubes is not likely to lower the risk for breast cancer and so we also did bilateral oophorectomy because some breast cancer cells need the hormones (progesterone and estrogen) produced by the ovaries to grow.

Although hysterectomy is not a part of risk-reducing surgery for BRCA1/2 mutations we offered it for our patient in view of incidental finding of menorrhagia due to uterine fibroids. Hysterectomy could also theoretically reduce risk of cancer in the cornual fallopian tubes [7]. Hysterectomy may also be

considered for women taking tamoxifen to reduce risk of endometrial cancer [8]. Therefore, when hysterectomy is performed at the time of PBSO, the indication of progesterone addition declines and consequently its potential effect on breast cancer risk [9]. Hysterectomy has also been said to cut off the route of ascending toxins that find their way from the external via the uterine cavity, fallopian tubes to the ovary.

Despite the fact that PBSO is performed worldwide for high risk candidates for development of ovarian cancer it is still an uncommon procedure in Nigeria. Screening for BRCA1 and BRCA2 genetic mutation is not routinely available and where available, the cost is usually exorbitant and out of reach. Our patient was screened by chance in the United States of America before opting to perform the potentially lifesaving surgery in Nigeria to save costs and be nearer to family during recuperation period.

Conclusion

Given our peculiarity, we have reported a rare experience of PBSO for a high risk woman with BRCA1 mutation carrier who had completed childbearing. Routine genetic testing for BRCA1 or BRCA2 mutation carriers are lacking in Nigeria. Gynecologists practicing in low-and middle income settings should be encouraged to make all options available for patients who could potentially be at high risk and offer PBSO when and where appropriate either as a stand-alone procedure or in conjunction with hysterectomy.

Availability of Data and Materials

Data sharing is not applicable to this article, because no datasets were generated or analyzed during the current study.

Contributions

All authors contributed to this case report. HIO, CMN, OSU, EAE and CCO drafted the manuscript. GUE and HIO revised the manuscript and performed the surgery and management of the patient. MEC performed the histopathological examination. GOU, GUE and MECe supervised the writing of the report. All authors participated in writing the report and approved the final version of the manuscript.

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