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Dilemmatic treatment of recurrent right breast mucinous carcinoma in a 34-year-old pregnant woman: a case report

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ABSTRACT

Introduction: In females under 35, the incidence of mucinous carcinoma (MC), a rare form of breast carcinoma, is 1%. When pregnancy-associated breast cancer is diagnosed, it presents a challenge to strike a balance between a potentially fatal therapy for the fetus and a life-saving therapy for the mother's breast cancer. This study aimed to present an MC case in a 34-year-old female with seven weeks-old gestations.

Case presentation: The 34-year-old woman presented with a lump on her right breast in 2012 and was diagnosed with giant fibroadenoma. Then, an excisional biopsy was performed, and the pathological finding showed a grade II MC. After one year of tumor regression, another mass was found on the same side of the breast. A repeated ultrasound was carried out, and then the patient was scheduled to have a radical mastectomy followed by radiotherapy. During the schedule of radiotherapy, she found out that she was 6-7 weeks pregnant. This condition brought a new problem since there was a chance that the radiotherapy may have affected the fetus. Therefore, the radiotherapy treatment was postponed until the 6-month gestational age or after the delivery of the baby.

Conclusion: Our case report shows the complexity of judgments to achieve the holistic treatment of our patient's condition. Furthermore, the determination of 'wait-and-observe' could be contemplated for the characteristics of the tumor and the patient's decision.

Keywords: breast cancer, mucinous carcinoma, pregnancy, treatment.

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INTRODUCTION

With over one million cases annually worldwide, breast cancer is the most common type of cancer among women, and the primary cause of death for women between the ages of 35 and 54.^{1,2} In Indonesia, breast cancer is the most common type of cancer in 12/100,000 women.³

Mucinous carcinoma of the breast is a unique subtype carcinoma with a rare incidence, 2% of all cases of breast carcinoma with an elderly prevalence >60 years. Meanwhile, in young adults below 35 years old, the prevalence is less than 0.5%.⁴ Mucinous carcinoma is also a slow-growing neoplasm; only a few cases have axillary lymph node metastasis. The prognosis for this type of carcinoma is relatively good, with a ten-year survival rate up to 90%.^{4,5} Our case shows the dilemmatic discretion of

mucinous carcinoma at a young age with the complication of pregnancy.

CASE PRESENTATION

A 34-year-old woman presented with a big lump on her right breast with a size of 13x8x6 cm in 2012 and firstly was diagnosed with giant fibroadenoma. She had no previous history of disease related to malignancy, and the patient's family was also told that no one had cancer. The excisional biopsy was performed a few days later, and the pathological finding showed mucinous carcinoma. The patient was referred to the oncologist to evaluate the requirement of adjuvant therapy, but the patient refused to do so.

After one year of tumor regression, another 7x6.5x4 cm mass was found on the same side of the breast. A repeated ultrasound was carried out and suggested a malignant mass; therefore, the patient

was scheduled to have a right radical mastectomy followed by radiotherapy. Figure 1 shows the clinical pictures of the patient after mastectomy.

The histopathology test of the tumor specimen showed groups of hyperplastic oval and round cells that formed glands with polymorphic and hyperchromatic nuclei. Among them were in the middle of lakes of extracellular mucin. The lymph node specimens were free from the cancerous cells. With all of this, it was classified as T3N0Mx.

During the scheduled radiotherapy, she found out that she was 6-7 weeks pregnant. This condition brought a new problem since there was a chance that the radiotherapy may have affected the fetus. The patient declined any other adjuvant treatment during her pregnancy. Therefore, the adjuvant treatment was postponed until the 6-month gestational age or after the baby's delivery.



Figure 1. Post mastectomy.

DISCUSSION

Mucinous (colloid) carcinoma is a rare case in everyday clinical practice. This type of cancer has a characteristic that is extracellular mucin. There are two subtypes, namely pure mucinous carcinoma (classic mucinous carcinoma) and mixed subtype, depending on the percentage of mucin production within the neoplasm.^{2,4,6} More than 90% of tumors in pure cancer subtypes produce extracellular mucin; in contrast, a mixed cancer subtype contains an epithelial component but lacks mucin.⁶ It is also considered a slow-growing neoplasm, with only a few axillary lymph node metastases cases.⁴ Because mucinous carcinomas have progesterone or estrogen receptors, they are probably more amenable to hormonal treatment.⁴

In addition to surgery and adjuvant therapy (hormonal, radiation, chemotherapy, or endocrine therapy), the treatment of breast cancer necessitates a multidisciplinary approach. Patient preferences and decisions must be taken into account when making management decisions.^{7,8} In our case, the patient had undergone the excisional biopsy and suggested to have an evaluation of adjuvant treatment. However, our patient chose to avoid the adjuvant treatment on the first hand, whereas the adjuvant therapy, such as radiation after surgery, might help to reduce the recurrence rate to 14.3%.⁷

For the recurrent tumor treatment, we chose the radical mastectomy for our patient because of the size of the tumor and its growth despite the reproductive age of our patient. The finding of our patient's pregnancy brings a special precaution in choosing the adjuvant therapy after the surgery. The radiation therapy could not be performed in the first trimester of pregnancy due to the harmful effects.⁹ Fetal deformities, growth restriction, microcephaly, mental retardation, fetal demise, and an increased risk of childhood cancer and leukemia are examples of potential deterministic effects during pregnancy.⁷ The justification of radiotherapy can be considered in the second or third trimester of pregnancy even though there are still slight risks for the mother and fetus. So, the best consideration for radiotherapy is after birth.⁹

Another adjuvant treatment, such as chemotherapy, is not suggested to the patient as the immunohistochemistry analysis has not been done yet. Immunohistochemistry analysis can be used to profile the excellent behavior and prognosis of this mucinous tumor. Of them, 93% do not overexpress HER2, 81% are positive for progesterone receptors, and 94% are positive for estrogen receptors.¹⁰

Because of the young age and the correlation with risk factors associated with a poor prognosis, chemotherapy is recommended during pregnancy.^{9,11} Chemotherapy given during the first trimester is linked to 7.5–17% of newborns having significant malformations, fetal death, and spontaneous abortion.^{11,12} In the second and third trimesters, the chemotherapy could be administered. Patients in the second and third trimesters of pregnancy may receive treatment with doxorubicin (50 mg/m² every 72 hours), cyclophosphamide (500 mg/m² every hour), and 5-fluorouracil (500 mg/m² over 1–4 days), according to Gwyn et al. and Hahn et al.^{13,14} Patients who are pregnant should not receive hormonal therapy due to the possibility of it interfering with their pregnancy-related hormonal status.⁹

After the delivery, the adjuvant therapy should be provided as soon as possible. During the radiotherapy and hormonal therapy, the patients should not breastfeed

as many cytotoxic drugs can cross into the breast milk. Delactating agents can be given to help reduce breast milk production.¹²

The limitation of this study is that we did not follow up with the patient until the end, so the management of this patient cannot be fully explained in this study.

CONCLUSIONS

Our case shows the complexity of judgments to treat our patient's condition holistically. Furthermore, the determination of 'wait-and-observe' could be contemplated for the characteristics of the tumor and the patient's decision.

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PATIENT'S CONSENT

The patient gave a written informed consent regarding the publication of this case.

CONFLICT OF INTEREST

The authors declare there is no conflict of interest regarding this study.

AUTHOR CONTRIBUTION

All the authors contributed equally to this study.

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