

## Case Report

# Breast Cancer Case using Tamoxifen during Pregnancy: A Case Report and Literature Review

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## Abstract

This is a case of 32 years old nulliparous female who was diagnosed in November 2004 as a case of carcinoma of the right breast , luminal A , (Estrogen Receptor positive Progesterone receptor negative, Her 2 negative, Ki67 10 %), poorly differentiated invasive ductal cancer, TNM stage,T2 No MO. She had a wide local excision and axillary clearance. As she is a case of low risk early stage luminal A breast cancer; she was not given chemotherapy, instead she had a course of external irradiation and was put on Tamoxifen (Astra Zeneca, 20 mg daily), and was advised not to get pregnant during this treatment, but she got pregnant and delivered normally a healthy infant, although Tamoxifen is potentially teratogenic.

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Received: 15 June 2017

Accepted: 1 July 2017

Published: 4 July 2017

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Editor-in-Chief:

Prof. Mohammad A. M. Ibnouf

**Keywords:** Breast cancer, Tamoxifen, Teratogenic effects

## المخلص

هذه هي حالة دراسة لامرأة تبلغ ٣٢ عاماً لم تحمل من قبل تم تشخيصها في نوفمبر ٢٠٠٤ بسرطان الثدي الأيمن، اللمعية A، (إيجابية مستقبلات الاستروجين، سلبية مستقبلات البروجسترون، سلبية Her2، Ki67 ١٠٪) سرطان القنوات الغازية فقيرة التمييز، تمرحل T2، N٠ M٠ MNT. أجري لها استئصال موضعي واسع وتنظيف للإبطيين. وبما انها حالة منخفضة المخاطر في وقت مبكر مرحلة اللمعية من سرطان الثدي. لم تحصل على العلاج الكيميائي، بل اعطيت دورة من التشعيع الخارجي ووضعت على تاموكسيفين (أسترا زينيكا، ٢٠ ملغ يوميا)، ونصحت بعدم الحمل أثناء هذا العلاج، لكنها حصلت على الحمل ووضعت طبيعياً طفلاً صحيحاً، على الرغم من أن التاموكسيفين يحتمل أن يكون مسخياً.

## 1. Introduction

Breast cancer is the commonest cancer among females worldwide. In Sudan it's the leading cancer in females. It forms (30-34%) of all female cancers, 40% are below the

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age of 45 years, i.e. within the reproductive age, this reflects our population pyramid [1]. Carcinoma of the breast is the most common malignancy occurring during pregnancy [2]. Tamoxifen is a non-steroidal drug which has estrogenic and an anti-estrogenic effect. It stimulates ovulation and has a teratogenic effect when used during pregnancy that has been established in animals and humans [3].

## 2. Case Report

A thirty two years old married patient with good performance status, and no co morbidities presented to us in November 2004 with a right breast central 3x3cm ,firm lump, and no other abnormality on clinical examination. She has no family history of breast cancer, her CBC, UE and LFT and CT Chest and CT abdomen and pelvis were normal. She had a true- cut needle biopsy, positive for a poorly differentiated invasive ductal carcinoma, grade three. Breast conservative surgery and a xillary clearance were performed, and the histopathology report showed (2.5 x 2 cm) mass, with 12 out of 12 reactive lymph nodes, grade III invasive ductal cancer, negative margins, more than 1.5 cm in all directions, with negative skin, nipple, and no lymph vascular invasion. ER positive (6/8), PR positive (5/8), Her<sub>2</sub> negative, Ki 67% = 10 % as she has a Luminal A, low risk stage (T<sub>2</sub> N<sub>0</sub> M<sub>0</sub>) breast cancer. She was given a course of external irradiation (40 Gy/15 fractions) by Co<sup>60</sup> excluding the axilla, and (Tamoxifen 10 mg twice per day, Astra Zeneca). She and her husband were counseled, and she was advised not to get pregnant during this treatment and to use an intrauterine contraceptive device (IUCD). The risks of getting pregnant during this treatment were well explained. She was advised to come for regular follow up, and in case she gets pregnant to stop Tamoxifen and come immediately for follow up.

She remained well, until September 2011, when she was seen at an antenatal clinic, where a four months pregnancy was confirmed and was therefore referred to us. Abdominal ultrasound showed 17 weeks gestation with no abnormality, (EDD = 10<sup>th</sup> Feb 2012), and no evidence of metastases. Clinically there was no evidence of local recurrence or metastases. Her laboratory investigations were normal. After counseling the couple, they were very keen to keep the pregnancy and accepted the consequences, as she is a nulliparous and they were married for 4 years. So the pregnancy was maintained, and she was followed with regular ultrasound of the abdomen. Amniocentesis testing was not available, she delivered normally a healthy infant on the 15<sup>th</sup> Feb 2012.

She was then followed regularly; she remained well with no evidence of disease when she was last seen at the follow up clinic in March 2017.

### 3. Discussion

Breast cancer is the commonest cancer in Sudanese women [1]. During pregnancy Tamoxifen and its metabolites affects the rapidly growing fetal tissue. It leads to birth defects in 20% of exposures [2–9]. Astra Zeneca data base records of patients exposed to Tamoxifen during pregnancy, showed 16 live births with congenital abnormalities and 122 live births without malformations. In addition there were 12 spontaneous abortions, 17 terminations of pregnancy without fetal defects, six terminations of pregnancy with fetal defects, two still births without malformations, two still births with malformation and another 57 unknown outcomes [10].

Tamoxifen induced abnormalities include Goldenhar's syndrome; ambiguous genitalia, vaginal bleeding and abortions, yet several reports described exposure to Tamoxifen with healthy neonates [5]. Clark et.al studied 85 healthy women with high risk of developing breast cancer who were given Tamoxifen prophylactically. They became pregnant while on Tamoxifen, with no fetal abnormalities observed after deliveries [11]. A case reported by Tewari et.al described a case of an infant borne with ambiguous genitalia, and three other case reports described four live births with congenital anomalies, no specific abnormality is identified to be associated with exposure to Tamoxifen during pregnancy [4]. The relatively high frequency of congenital abnormalities means that reliable birth control during Tamoxifen treatment is essential during its use and a washout period of two months should be observed based on the known half-life of Tamoxifen. So, there is a general agreement to postpone Tamoxifen treatment until after delivery [10]. There are no prospective studies assessing the effect of termination of pregnancy on survival.

Our patient got pregnant while on Tamoxifen, in spite of the fact that she and her husband were counseled, the risks were explained, and was advised not to get pregnant while on Tamoxifen and to have an intrauterine contraceptive device, but she didn't use any form of contraception as she was very keen to get pregnant due to the social pressures from the husband and the family and the fear that her husband may divorce her or remarry. But fortunately she delivered a normal infant, similar cases were reported by Isaacs et al. [7], Oksuzogolo et al. [9], and Emra Koca et al. [12].

### 4. Conclusion

Using Tamoxifen during pregnancy is contraindicated because it causes birth defects in 20% of the cases, so good counseling of Breast Cancer premenopausal women treated with Tamoxifen is important. They should be advised not to get pregnant and to stop

tamoxifen immediately if they get pregnant. We reported a case where tamoxifen was used during pregnancy and luckily there were no birth defects.

## References

- [1] A. Elamin, M. E. Ibrahim, D. Abuidris, K. E. H. Mohamed, and S. I. Mohammed, "Part I: Cancer in Sudan-burden, distribution, and trends breast, gynecological, and prostate cancers," *Cancer Medicine*, vol. 4, no. 3, pp. 447-456, 2015.
- [2] T. T. White, "Carcinoma of the Breast and Pregnancy," *Annals of Surgery*, vol. 139, no. 1, pp. 9-18, 1954.
- [3] T. Iguchi, M. Hirokawa, and N. Takasugi, "Occurrence of genital tract abnormalities and bladder hernia in female mice exposed neonatally to tamoxifen," *Toxicology*, vol. 42, no. 1, pp. 1-11, 1986.
- [4] K. Tewari, R. G. Bonebrake, T. Asrat, and A. M. Shanberg, "Ambiguous genitalia in infant exposed to tamoxifen in utero," *Lancet*, vol. 350, no. 9072, p. 183, 1997.
- [5] S. L. Cullins, G. Pridjian, and C. M. Sutherland, "Goldenhar's Syndrome Associated With Tamoxifen Given to the Mother During Gestation," *JAMA: The Journal of the American Medical Association*, vol. 271, no. 24, pp. 1905-1906, 1994.
- [6] J. C. Berger and C. L. Clericuzio, "Pierre robin sequence associated with first trimester fetal tamoxifen exposure," *American Journal of Medical Genetics, Part A*, vol. 146, no. 16, pp. 2141-2144, 2008.
- [7] B. Geert, H. Denys, O. de Wever, V. Cocquyt, and R. van den Broeck, "Use of tamoxifen before and during pregnancy," *Oncologist*, vol. 16, no. 11, pp. 1547-1551, 2011.
- [8] K. Koizumi and T. Aono, "Pregnancy after combined treatment with bromocriptine and tamoxifen in two patients with pituitary prolactinomas," *Fertility and Sterility*, vol. 46, no. 2, pp. 312-314, 1986.
- [9] R. J. Isaacs, W. Hunter, and K. Clark, "Tamoxifen as systemic treatment of advanced breast cancer during pregnancy - Case report and literature review," *Gynecologic Oncology*, vol. 80, no. 3, pp. 405-408, 2001.
- [10] B. Geert, H. Denys, O. de Wever, V. Cocquyt, and R. van den Broeck, "Use of tamoxifen before and during pregnancy," *Oncologist*, vol. 16, no. 11, pp. 1547-1551, 2011.
- [11] S. Clark, "Prophylactic tamoxifen," *The Lancet*, vol. 342, no. 8864, p. 168, 1993.

- [12] E. Koca, T. Y. Kuzan, T. Babacan, I. H. Turkbeyler, F. Sarici, and K. Altundag, "Safety of tamoxifen during pregnancy: 3 case reports and review of the literature," *Breast Care*, vol. 8, no. 6, pp. 453-454, 2013.