Medullary Thyroid Carcinoma in Pregnancy: A Case Report and Literature Review on Maternal and Neonatal Outcome of Delayed Surgery Post-Partum

Hanzali Jumastapha[1,2], YL Tan[3], Sadhana Mahamad[3]

[1] Department of Otorhinolaryngology, University of Malaya(UM), Malaysia.
[2] Department of Surgery, Faculty of Medicine & Health Sciences, Universiti Malaysia Sarawak (UNIMAS)
[3] Breast And Endocrine Unit , Hospital Putrajaya , Precint 7 , Putrajaya Malaysia.

Abstract

Thyroid malignancy poses a challenge especially when diagnosed during pregnancy. Although in papillary thyroid carcinoma, surgery can be safely delayed until the post-partum period, in medullary thyroid carcinoma, there is more urgency to treat.

Here, we present a case of a 31-year-old female was diagnosed with medullary thyroid carcinoma during her third trimester. Diagnosis was made by aspiration cytology. Due to the patient's condition, a CT scan was contraindicated and thus we were unable to make a complete assessment. A decision was made that the surgery was done after delivery, and when a complete assessment can be done. The surgery was successful and there were no complications both for the patient and her baby.

In patients whom diagnosis of medullary thyroid carcinoma is made during the third trimester, it appears to be safe for mother and baby that surgery is done during the postpartum period.

Keywords: Medullary thyroid carcinoma, MTC, thyroid carcinoma in pregnancy, MTC in pregnancy

Introduction

Medullary thyroid carcinoma (MTC) is a rare malignancy which is derived from the calcitonin (CT)-secreting parafollicular C-cells of the thyroid gland. MTC accounts for 5-10% off all thyroid cancers. It occurs either in the sporadic or the inherited form. About 70-75% of MTC are sporadic while the rest are inherited.[1] Sporadic MTC usually occurs between the fourth to sixth decades of life.[1] Thus, MTC is rare during the child-bearing age. It is also associated with a poorer prognosis compared to other differentiated thyroid cancer (DTC).[2-4] We report a case of MTC diagnosed at third trimester; its complexity in management, its eventual maternal and neonatal outcome along with literature review.

Case study

A 31-year-old pregnant woman at the 34-week of gestation was referred to the Breast and Endocrine Surgery Clinic in Hospital Putrajaya with a neck swelling in of 5 years duration. She was diagnosed with nodular goiter 3 years ago but defaulted her follow up as she was asymptomatic. She has no family history of thyroid disease or malignancy.

In view of the long interval of deference in follow up, a repeat of investigations was performed; including thyroid function test, ultrasound neck, and FNAC. Ultrasound showed an enlarged thyroid with multiple heterogenous nodules in both lobes. The largest nodule was in the right thyroid lobe measuring 1.5 x 1.2 cm and characterized as hypoechoic with focus of macrocalcifications within. There was no significant lymphadenopathy and no retrosternal extension. Patient was biochemically hyperthyroid with T4 of 30.7 pmol/L and TSH of 0.5 mU/L.

Fine Needle Cytological studies on the suspicious nodule revealed single lying and loose clusters of atypical cells. Immunohistochemical stains were positive for TTF-1 (thyroid transcription factor-1), synaptophysin, chromogranin, and calcitonin. They were negative for thyroglobulin. These features were consistent with MTC. Her CEA (Carcinoembryonic Antigen) and calcitonin were also raised at 41.1 ng/ml and 534.4 ng/L respectively. Due to pregnancy, patient was then started on propylthiouracil (PTU) 100mg tds to control her hyperthyroidism and an elective computed tomography of the neck was planned after patient's delivery.

Her case was then discussed in our multidisciplinary meeting for induction of labour at 37 weeks. Patient had a vaginal delivery of a healthy female baby weighing 3.84kg. There were no post-partum complications. As the patient was found to be group B streptococcus positive, her baby was then transferred to the Special care nursery (SCN) for observation and noted to have normal thyroid function level from umbilical cord blood.

A staging CT scan which included the neck, thorax, abdomen, and pelvis was done post-delivery. Scan showed bilateral thyroid gland enlargement with the left lobe larger than the right. The right lobe measures 2.3 x 2.6 x 6.6 (AP x W x CC) cm while the left measured 3.0 x 3.8 x 7.5cm. There were multiple, heterogenous, solid cystic nodules of varying sizes in both lobes. The largest nodule was at the lower pole of the left lobe, measuring 1.9 x 2.3 x 1.9cm. There were two solid-cystic