Journal of Advanced Research (2016) 7, 565–570

Cairo University

Journal of Advanced Research

REVIEW

A review on thyroid cancer during pregnancy: Multitasking is required

Hussein Khaled [a,*], **Nasr Al Lahloubi** [a], **Noha Rashad** [b]

[a] *Department of Medical Oncology, National Cancer Institute, Cairo University, Egypt*
[b] *Department of Medical Oncology, Military Armed Hospital Caner Center, Cairo, Egypt*

GRAPHICAL ABSTRACT

ARTICLE INFO

Article history:
Received 26 January 2016
Received in revised form 19 February 2016
Accepted 23 February 2016
Available online 2 March 2016

Keywords:
Thyroid cancer

ABSTRACT

Thyroid cancer is the second most common cancer diagnosed during pregnancy after breast cancer. The goal of management is to control malignancy and prevent maternal and fetal complications as a result of maternal hypothyroidism. The role of female sex hormones as an etiologic factor was investigated, with no clear association. Pregnancy can cause an increase in size of a previously existed thyroid nodule through the structural similarity between TSH and BHCG, and the normally expressed estrogen receptors on thyroid gland cells. Effect of pregnancy on development and prognosis of differentiated thyroid malignancies (papillary and follicular) has also been studied. The prognosis of thyroid cancer is not worse in patients diagnosed during pregnancy or those who got pregnant after curative treatment. Termination

* Corresponding author. Tel.: +20 122 215 1040; fax: +20 2 5252953.
E-mail address: khussein528@gmail.com (H. Khaled).

Peer review under responsibility of Cairo University.

Production and hosting by Elsevier

http://dx.doi.org/10.1016/j.jare.2016.02.007

Pregnancy
Pregnancy related disorders
Tyrosine kinase inhibitors
Radioactive iodine

of pregnancy is not indicated at all, surgery can be delayed till after delivery except in rapidly growing aggressive tumors. While radioactive iodine ablation is absolutely contra-indicated, the new systemic therapies are not well studied during pregnancy. However, almost all these new agents are classified as FDA category C or D and are better to be avoided. The effect of pregnancy on other types of thyroid cancer (medullary and anaplastic thyroid tumors) is not well studied because of very low incidence with pregnancy. The endocrinological management of thyroid cancer during pregnancy is of utmost importance. The hypothyroidism after total thyroidectomy can cause fetal hypothyroidism. Therefore, the management of thyroid cancer related to pregnancy needs a multidisciplinary team.

Dr. Hussein Khaled is a Professor of medical oncology at the National Cancer Institute of Cairo University. He was the former minister of higher education of Egypt (2012), former vice president of Cairo University for post graduate studies and research (2008–2011), and the former dean of the Egyptian National Cancer Institute (2002–2008). This year (2015), he won the State Recognition Prize for advanced technological sciences in the medical field. His research activities are focused mainly on bladder cancer (both biologic and clinical aspects), breast cancer, and malignant lymphomas, with more than 150 national and international publications (total impact factor of 470, total citations of 1741, and h-index of 22).

Dr. Nasr Al Lahloubi is a Professor of medical oncology at the National Cancer Institute, Cairo University. He is a member of many international societies; ESMO, ASCO, ASH, EASO, and the Secretory of the Egyptian Universities Promotion Committees (EUPC, Committee number 83). He has many publications and national educational presentations and international poster in SABCS, ASCO, and ESMO. He is leading the scientific meetings of the medical oncology department. He is the MD program instructor and a member for external evaluation committee for the MD examination. He is also a member of the Higher Committee of Medical Specialties; Egyptian Fellowship Board; Medical Oncology; Ministry of Health.

Dr. Noha Rashad is a medical oncology specialist-Maadi Armed Forces Medical Compound, Oncology Hematology Hospital. She passed the final examinations for MD degree of medical oncology and is being a certified member of ESMO (2011).

Introduction

Thyroid cancer is the second most common cancer diagnosed during pregnancy [1]. The management of thyroid cancer in this situation has multiple goals: to control the malignancy, overcome the hormonal disturbances after thyroidectomy and to avoid drawbacks on fetus as a result of maternal hypothyroidism [2]. Total or near total thyroidectomy is the standard of care for patients diagnosed with thyroid cancer, followed by radioactive iodine administration as an adjunctive treatment in differentiated thyroid tumors.

Pregnancy is an absolute contraindication for radioactive iodine administration. The timing of surgery, the impact of pregnancy on prognosis of thyroid cancer and monitoring of pregnant women with thyroid cancer are important points to be discussed while treating a case presented with thyroid cancer related to pregnancy [3].

The aim of this article is to revise the medical literature for data related to this clinical situation, aiming to provide answers for questions regarding management of such patients.

Epidemiology and risk factors

The incidence of thyroid cancer is rising all over the world [4]. The increase is affecting all ethnic and age groups with an increased risk among women below 45 years old [5]. The increase may have some geographical variation with significant increase in Eastern Europe since the Chernobyl nuclear power plant accident and areas affected by radioactive fallout as Belarus and Ukraine [6]. The increase in incidence is not accompanied by an increase in mortality; this reflects the indolent nature of the disease, as the rise in cause specific mortality rates is expected many years later [4].

Whether this increase in incidence is a true increase or inflated by increase in diagnosis has been debated. Some authors attribute the increase in incidence to the increased utilization of sensitive radiological maneuvers i.e. ultrasound in health care, leading to diagnosis of lesions that otherwise was going to pass unnoticed. This premise can explain the increased incidence of small tumors. The increase in incidence of large tumors and the almost exclusive increase in papillary histopathology subtype can argue against the premise of false increase due to early detection and support the premise of a true increase in incidence worldwide [7].

Women are affected by thyroid cancer more than men as female to male ratio may reach to 3–1. Thyroid cancer is the second most common malignancy during pregnancy, preceded only by breast cancer with an incidence of 14 per 100,000 live births [1]. History of exposure to ionizing radiation, and iodine deficiency are well established risk factors for thyroid cancer. MEN2 is a genetic syndrome that affects 1–2% of all the