
بسم الله الرحمن الرحيم
وَأَنْزَلَ اللهُ
عَلَيْكَ الْكِتَابَ
والْحِكْمَةَ
وَعَلَّمَكَ مَا لَمْ
تَكُنْ تَعْلَمُ
وَكَانَ فَضْلُ
اللهِ عَلَيْكَ
عَظِيمًا

الطبيعة البيولوجية لسرطان الثدى العائلى فى مصر

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BIOLOGICAL NATURE OF FAMILIAL BREAST CANCER IN EGYPT

Thesis

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INTRODUCTION

Breast cancer is a major global problem with nearly one million cases occurring each year over the past several decades, the disease incidence has raised world wide, in both developing and developed countries ***(Kurian et al., 2011).***

A number of factors have been identified that increase the risk of breast cancer. One of the strongest of these risk factors is the history of breast cancer in a relative. About 15-20% of women with breast cancer has such a family history of the disease, clearly reflecting the participation of inherited (genetic) components in the development of some breast cancers. Dominant breast cancer susceptibility genes, including BRCA1 and BRCA2, appear responsible for about 5% of ail breast cancer ***(Kurian et al., 2011).***

Familial breast cancer is characterized by young age at diagnosis, an increased risk of bilateral breast cancer, an increasing risk in conjunction with increasing numbers of affected family members, and a strong association with ovarian cancer ***(Greene, 2010).***

Individuals with breast cancer have a 20-30% chance of having at least one relative with the disease. However, only 5-10% of the cases are a direct result of gene mutations in highly penetrable genes, such as BRCA1 and BRCA2 (BRCA1/2) as well as gene TP53 ***(Edlich et al., 2009).***

The function of these two genes is classified as tumour suppressors, is linked with key metabolic mechanisms such as DNA damage repair, regulation of gene expression and cell cycle control. The pathological BRCA allelic variants may cause alteration of protein function, transcriptional activity and DNA repair. Accumulation of the defects leads to widespread chromosome instability that may be directly responsible for cancer formation ***(Kurian et al., 2011).***

Owing to the significant breast cancer risk associated with BRCA1 or BRCA2 mutations, women with these mutations have several options available to them by which to reduce the risk of breast cancer. These include surgical (prophylactic mastectomy and prophylactic oophorectomy) and medical (chemoprevention) options. The breast cancer risk reductions associated with these options range from a 90% risk reduction associated with prophylactic mastectomy to approximately 50% with oophorectomy or tamoxifen. This is a major decision that requires time and a multidisciplinary approach ***(Metcalfe, 2009).***

AIM OF THE WORK

The aim of our work is to provide an overview of the demographics, pathological types and biological nature of familial breast cancer in Egypt in order to discover the potential targets for prevention of familial breast cancer.

ANATOMY OF THE BREAST

Breast

The breasts form a secondary sexual feature of females and are the source of nutrition for the neonate. They are also present in a rudimentary form in males. The breast are the site of malignant change in as many as one in ten women ***(Ellis et al., 2008)***.

Developmental anatomy

In humans, the breast develops on the ventral side of the embryo from a narrow ectodermal thickening that extends from the axilla to the inguinal area bilaterally ***(Spratt, 2009)***.

This milk line or milk streak is present by the fifth week of fetal life. On the sixth or seventh week, each streak has atrophied except for the pectoral sites at which the future breasts will develop.

At 8 to 10 years of age, when under hormonal stimulation the ducts extend into the superficial pectoral fascia and arborize within a special supporting stroma to form colleting ducts and terminal duct lobular units ***(Spratt, 2009)***.

Topographic anatomy:

The breast lies upon the deep pectoral fascia, which in turn overlies pectoralis major and seratus anterior

superiorly and external oblique and its aponeurosis (as the latter forms the anterior wall of the sheath of rectus abdominis) inferiorly. Between the breast and the deep fascia the loose connective tissue in the submammary space allows the breast some degree of movement on the deep pectoral fascia. Advanced mammary carcinoma may, be invasion, cause tethering or fixation of the breast to the underlying musculature. Occasionally, small projections of glandular tissue may pass through the deep fascia into the underlying muscle in normal subjects ***(Fry, 2009)***.

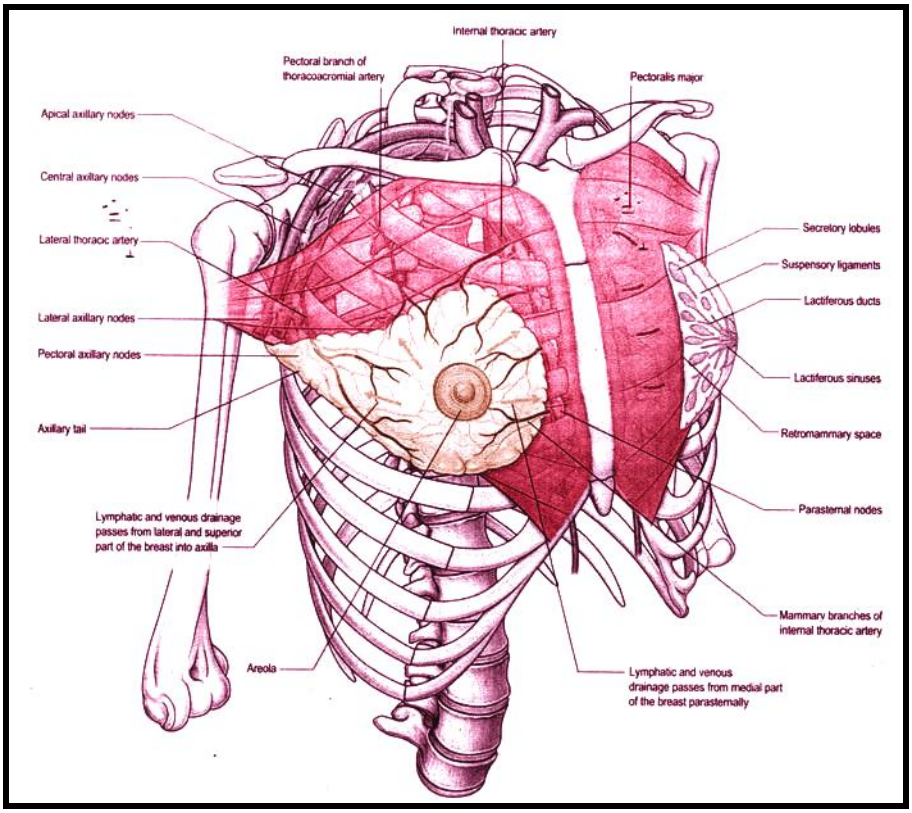

Figure (1): The relations of the breast ***(Fry, 2005)*.**