DETECTION AND MANAGEMENT OF EARLY CANCER BREAST

ESSAY

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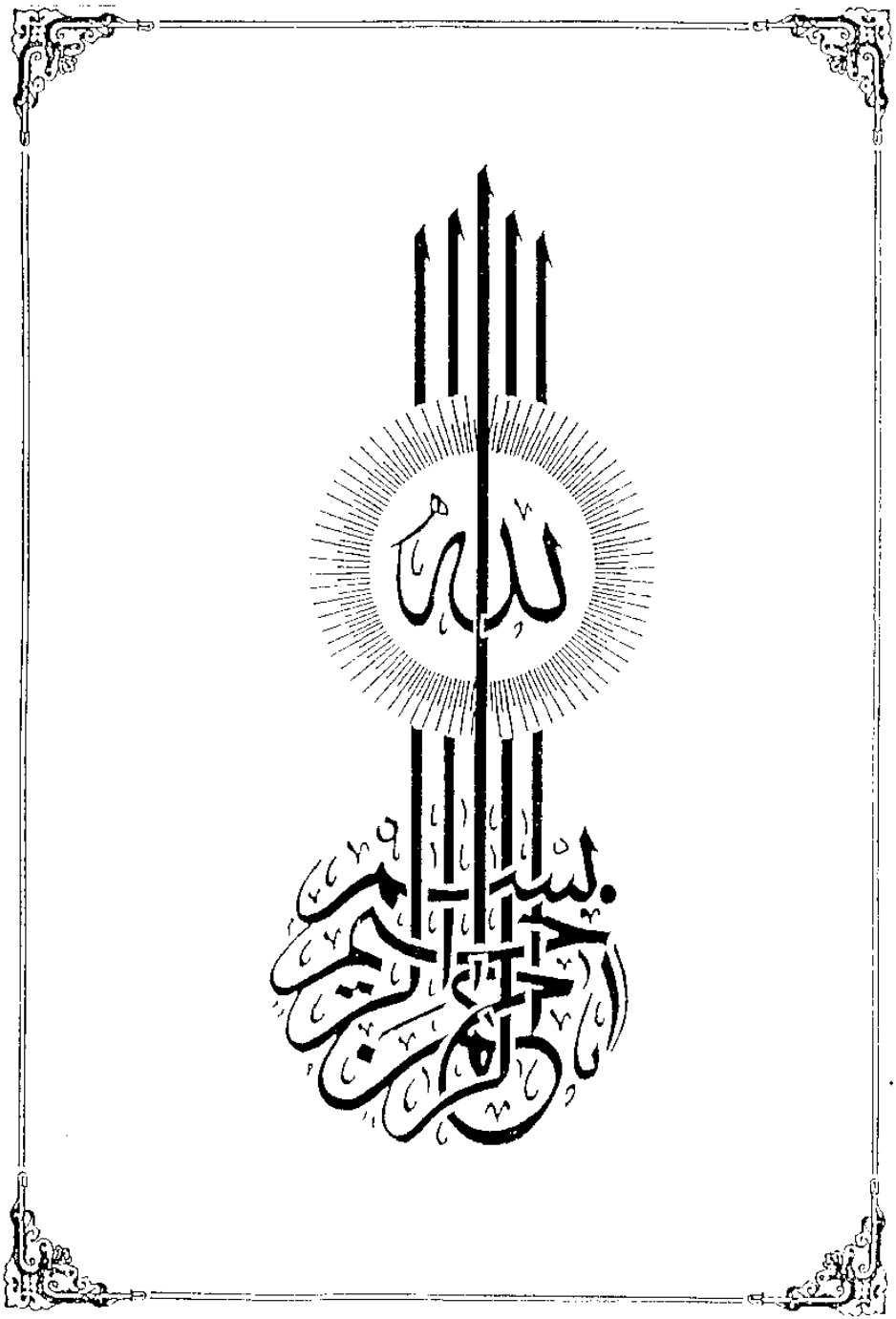

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ANATOMY OF THE FEMALE BREAST

The immature female breast ,and the male breast resemble each other . In both the nipple is small but the areola is fully formed . It consists of few ducts embeded in fibrous tissue.
At puberty ,the female nipple and breast both enlarge and retain the female form .

The axillary tail of Spence is a prolongation from the outer part of the gland which passes up to the level of the third rib in the axilla ,where it is in direct contact with the pectoral lymph glands .
It passes through an opening in the axillary fascia known as the foramen of Langer . That is to say that the axillary tail is under the deep fascia and not superficial to it(Du Plessis,1975) .

The mammary gland consists of 12 to 20 glandular lobes .Each lobe is drained by a lactifrous duct.
Each lactiferous duct has an ampullary opening on the surface of the nipple.

The mammary gland is situated between the superficial and the deep layers of the superficial fascia .The deep layer of the superficial fascia passes immediatly deep to the mammary gland , where it blends with the superficial abdominal fascia of Scarpa.Between this fascia and the deep fascia over the pectoralis major muscle ,a submammary space in which the lymphatics run.

The glandular portions and the fat of the mammary gland are arranged within a connective tissue supporting stroma that have thicker bands ,suspensory ligaments of Cooper .Which are well developed in the upper portion of the breast This ligaments attach the breast tissue firmly to the skin ,resuting in dimpling of the skin in breast lesions assocsciated with fibrosis .

BLOOD SUPPLY :

The arterial supply of the breast is derived from the thorcic branches of the axillary artery,internal mammary and intercostal arteries .

The veins form an anastomatic circle around the base of the nipple called circulus venousus.Branches from this circle transmit the blood to the circumference of the gland to end in the axillary and internal mammary veins .

Lymph drainage :

Superficial parts of the breast drain to a subareolar lymphatic plexus which lies under the areola. The deep parts of the breast drain to a submammary plexus which lies over the deep fascia overlying the pectoralis major and serratus anterior muscles .

Fine lymphatic ducts flow from the subareolar plexus along the lactiferous ducts in the periductal connective tissue than along the major venous channels to the draining lymph nodes .These lymphatics carry lymph as a result of wave like contractions,they contain valves to prevent reverse flow which occurs to the skin or along the chest wall in the presence of obstruction in deeper channels .

The lymphatics originating within the breast drain by the following pathways as mentioned by (Christopher, 1982) .

The major route of drainage is the axillary pathway . Lymphatics from the lobules and ducts pass through the the axillary fascia to the lateral thoracic group ,scapular group of nodes are the next step in progression , then to the central group and finally to the apical group .

Lymphatics draining the medial half of the breast pass through the intercostal muscles to the internal mammary lymph nodes .

Axillary lymph nodes :

The axillary lymph nodes can be devided into 6 groups .

1. External mammary nodes:

The lateral thoracic group extend from the axillary tail of the breast to the apex of the axilla .
The lymph nodes lie between the anterior and the medial walls of the axilla .

The upper 3 pectoral lymph nodes lie behind the pectoralis major muscle in the region of the second and third intercostal spaces . They recieve the main stream of lymph from the mammary gland .The lower pectoral lymph nodes lie along the lateral thoracic vessels . They recieve lymph from the side of the thorax (Cunnigham ,1967) .

2. The Scapular Nodes :

They lie close to the subscapulr vessels . The thoracodorsal nerve and the intercostobrachial nerve run through this group of nodes .

3. The Central Nodes :

They lie embedded in the fat in the center of the axilla . They are the largest and the most numerous of the axillary nodes . They connect other axillary nodes together .Their efferents pass to the apical group (Cunningham,1967). They are the group of nodes in which metastases are most often found. (Du Plessis, 1975).

4. The Interpectoral Nodes :

They are called Rotter's nodes .They lie between the pectoralis major and pectoralis minor muscles. Lymphatics draining the posterior part of the breast

accompany the thoracoacromial vessels.They pass through these lymph nodes to end in the apical nodes .

5. The Axillary Vein Nodes :

They lie along the lateral portion of the axillary vein , on its ventral and caudal aspects , from the tendon of the latissimus dorsi to the origin of the thoracodorsal vein .

6. The Subclavicular Nodes :

This is the highest and the most medial group of axillary nodes .The nodes are situated along the ventral and caudal aspects of the axillary vein above the origin of the thoracoacromial vein to the apex of the axilla. The collecting trunks from all the other groups empty into this group of lymph nodes .One or more large lymph--atic trunk arise from this group and pass upward and laterally beneath the tendon of the subclavius muscle and the clavicle to empty into the junction of the jugular and subclavin veins .

The Internal Mammary Lymph Nodes :

They lie along the internal mammary vessels : the costal cartilages mainly in the first to the third spaces ,they are variable in their number,size and distribution.The second being the most constant.

There is connection between the left and right internal mammary routes at the first interspace level.(Haagensen, 1971) .

** The internal mammary lymph nodes and the axillary nodes drain toward medial end of clavicle near the junction of the subclavian and internal jugular veins. Tumour involvment in this area produces retrograde spread to the supraclavicular and the mediastinal nodes . (Haagensen 1971) .

The abdominal pathway by which lymphatics communicat through the abdominal wall with lymphatics in the extra peritoneal areolar tissue . Some lymphatics also anastmose with lymph vessels of the liver and that of rectus sheath down to the umbalicus. This explains how breast cancer gives malignant nodules at the umbalicus.(Gray-1973).

AETIOLOGY OF CANCER BREAST

Geographical distribution

The incidence of cancer breast is not uniform all over the world . It is the commonest malignancy affecting females in USA , England and France .
While its incidence is infrequent in Russia and rare in Japan (Sediman et al., 1976) .
In Egypt cancer breast accounts for 35% of the total malignancies among egyptian females (Ibrahim et al.,1983)

Demographic data

Sex is the most important risk factor, 99% of cancers occur in females , 1% occur in males(Sediman 1972).
In Egypt breast cancer in males represents 5% of cases due to bilharzial hepatic affection and subsequent elevation of serum oestrogen (Omar et al., 1983).

As regards age the incidence of cancer breast rises quickly between the age 25 and 45 years and levels off to a plateau between 45 and 55 years of age , thereafter incidence and mortality resume their original steep course (Doll et al.,1970)

The risk of cancer breast is higher in high socio-

-economic classes (Lipsett,1977).Late marriage and fewer children may be the contributing factors,but patients of high social class have a higher survival rate (Papioannou,1974).

Risk Factors For Cancer Breast

The risk of cancer breast for women first pregnant before the age of 20 is about half that of those with first pregnancy after 25 years (Cole & Mac Mahon 1976) . Births after the first full term pregnancy have no or very little protective role (Mac Mahon et al.1970) Pregnancy ending in abortion or still birth do not protect against cancer breast (Paffenberger,1978).

The risk of cancer breast is related to the total years of menstruation ,so it is relatively low in women with late menarche and early menopause (Steraszewski,1971) .

Mac (1977) stated that oestrogen is clearly a carcinogenic agent .

Oestrogen replacment therapy in menopausal women is accompanied by 3% greater risk of breast cancer (Hoober et al., 1976) . Yet Taylor (1972) declared that 14 years of widespread use of oral contraceptives were not accompanied by an increase in the incidence of benign or malignant breast tumours.

Among all breast cancer patients 15 to 30% of patients have some genetic causation (Anderson ,1977). Daughters of mothers who had cancer breast develop the disease on the average 10 years earlier than their mothers (Haagensen ,1977).

A woman who had cancer in one breast faces a 1%risk of cancer in the remaining breast every year after mastectomy (Voherr,1980). Carcinoma of the second breast tends to be of the same histological type as the first malignancy (Mc Divit , 1978).

Althaugh in women with family history of cancer breast the incidence of benign breast diseases seems to be high (Armstrong & Davis ,1978).

Yet Bulbrook (1976) did not find that benign breast diseases (except solitary papilloma) increase the risk of cancer breast .

Large dose of ionising radiation can be carcinogenic to the breast ,the effects may be delayed for 20 years or more (Leis ,1977). The risk increases with increasing the dose (Mc Gregor et al.,1977).

In patients having other malignancies,the incidence of a second malignancy is 11 fold higher than can otherwise be expected (Rosen,1978). Familial cancer breast is reported to be associated with cancer stomach,colon, ovaries and body of uterus (Armstrong &Davis ,1978) .

Any break through the normal immune system facilitates the susceptibility to the development of cancer breast and other malignant tumours .

Such persons are :

Old patients with thymic atrophy .

Patients with decreased number of T-lymphocytes .

Patients with protien calorie malnutrition .

Patients recieving chemotherapy or immunosupperssive therapy .

Carcinogenic effect of radiation

The female breast is highly susceptable organ to irradiation and may be more susceptable than bone marrow, lung and thyroid (Gregg,1977) . The risk is directly proportional to the dose, but there is no safe threshold .

Adolescents are more sensetive ,nuliparous women have a greater risk, and there is synergism between the radiation risk and other risk factors (Mole,1978).

The dose in the past was 7- 12 rads. Now it is 0.5 - 1 rad per examination .It may reach 0.02rad or even less per exposure (Karila ,1982) .