AN ESSAY ON :

CANCER BREAST

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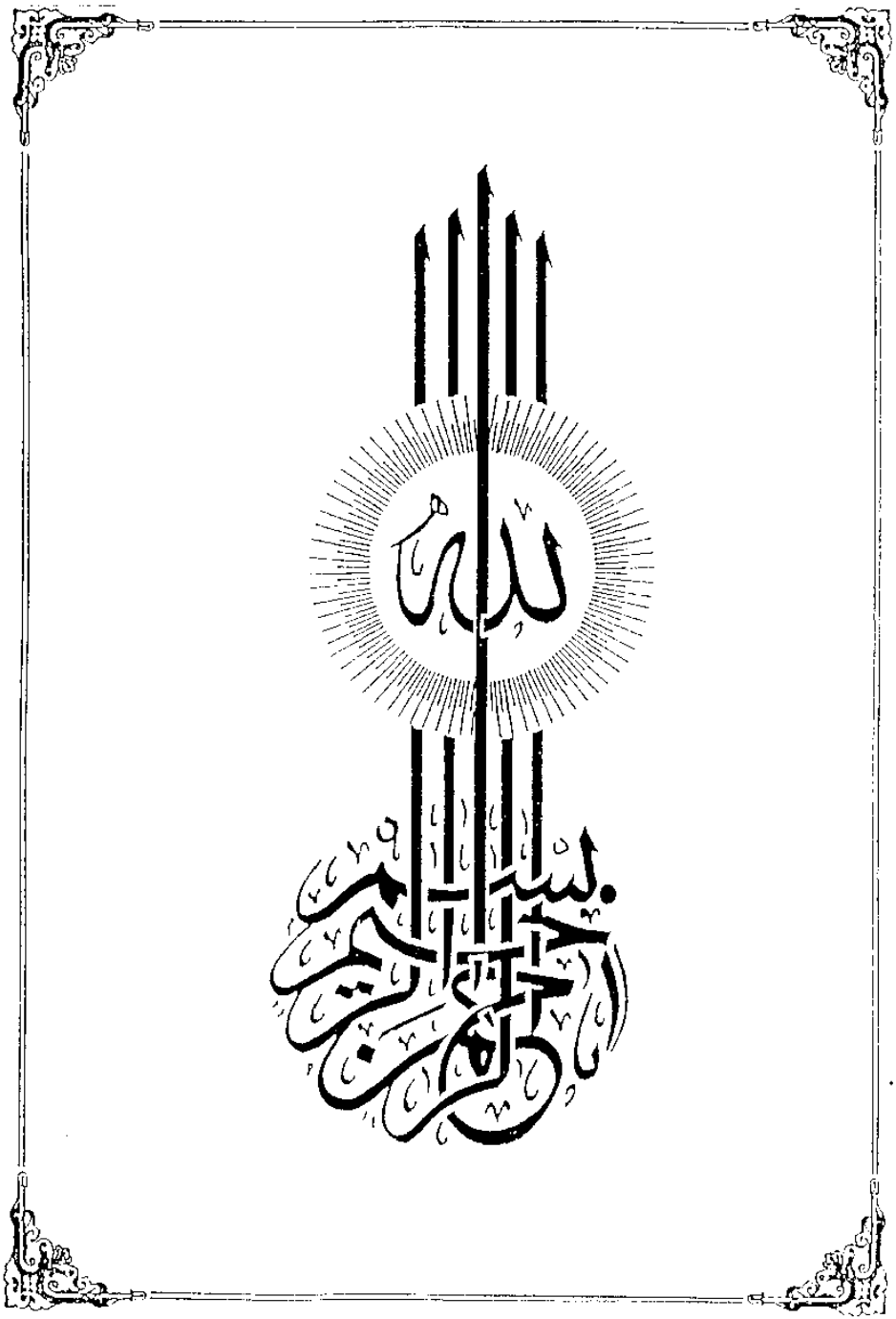

Index

ANATOMY

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PHYSIOLOGY

ANATOMY OF THE BREAST

The mammary gland together with its stroma, surrounding fat (superficial fascia) and over-lying skin constitute the female breast.

Relations

Position:

- The breast is conical in shape. Its base lying on the front of the thorax extending to its side. It extends from the parasternal line to the mid axillary line and from the second to the sixth ribs in the mid - clavicular line.
- Two thirds of the breast lies on pectoralis major muscle. Its infero - lateral third lies on serratus anterior and external oblique muscles.

Axillary - tail:

A process of the gland extends along the lower border of pectoralis major to the axilla. In some normal cases it is palpable and in a few it can be seen in a pre-menestrual phase and during lactation. A well developed axillary tail is sometimes mistaken for a mass of enlarged lymph nodes or lipoma.

Nipple:

- A prominance below the centre of the gland witch carries the openings of lactiferous ducts of mammary gland.
- Normaly, it lies opposite the fourth intercostal space.
- Surrounded by a circular patch of skin which is slightly darker in colour and Known as areola of the breast.
- In the first pregnancy the colour of the areola becomes dark brown due to deposition throughout life. There is no fat in the nipple or under the areola.

Mammary gland:

- This gland has no capsule.
- The lobules and lobes of the gland are embeded fat of the superficial fascia. The great amount of fat causes smooth round contour of the breast .
- Fibrous strands from the stroma of the gland they extends, between the lobes and lobules of the gland , from the skin to the deep fascia.
- The parenchyma of the gland is composed of 15 - 20

lobes. Each lobe is composed of several lobules.

- The ductules collected into one duct for each lobe, known as lactiferous duct.
- The lactiferous ducts (15 - 20) converge towards the nipple. Each duct dilates under the areola to form a lactiferous sinus.
- The ducts are surrounded again to open separately on the summit of the nipple.

Blood supply:

- Lateral thoracic artery which is a branch of second part of axillary artery by branches that curl around the pectoralis major and by other branches that pierce the muscles.
- Second, third and fourth perforating branches of internal mammary artery through the inter - costal space beside the sternum.
- Similar perforating branches arises from the inter - costal arteries.
- Pectoral branches of thoraco - acromial artery supply the upper part of the breast(Mahran Z., 1974).

Venous return: Simply follows the above mentioned arteries.

Lymph Drainage of The Breast:

The lymphatics of the gland form a dense plexus under the areola which is known as sub-areolar lymphatics plexus (sub-areolar plexus of Sappy).

- The centeral and lateral parts of the gland drain into the anterior (pectoral) group of axillary lymph nodes.
- From the upper part of the gland some lymphatics pierce the clavicular head of pectoralis major and clavipectoral fascia to reach the para-sternal (internal mammary lymph nodes).
- From the medial part of the gland some lymphatics pass with the perforating branches of internal mammary artery through the inter-costal muscles to reach the para-sternal (internal mammary lymph nodes).
- Some lymphatics the medial part of breast cross the median plane to anastomse with lympfatics of the opposite breast.
- Branches of the infero-medial part of the breast anastomes with lymphatics of the linea alba and anterior wall of rectus sheath.

- Few lymphatics of infero-medial part of the breast pass deeply to amastomose with sub-diaphragmatic plexus of lymphatics (porta hepatis and mediastinal nodes). (Zeid. M., 1978).

N . B . :

- 75% of lymphatics of the breast is drained to axillary lymph nodes (this group is the first to examined in cancer breast).
- In cancer breast the opposite side may be affected through the anastomsing lymphatics.

PHYSIOLOGY OF THE BREAST:

- Development of the breasts:

Many hormones are necessary for full mammary development. In general estrogens are primirly resposible for proliferation of mammary ducts and progestrone for the development of lobules and alveoli.

- Effects of estrogens on the breast:

Estrogens produces duct growth in the breasts and largely responsible for breast enlargement at puberty in girls.

- Breast enlargement which occurs when estrogens containing creams are applied locally is due primirly to systemic absorption of estrogens, although a slight local effect is also produced.

- Hormonal control of breast development and lactation:

Estrogens (plus progesrone) in presence of corticoids and growth-hormones cause duct proliferation and growth at puberty. During pregnancy, all these hormones plus prolactin bring about a full alveolar development and some milk secretion.

After delivery, increased secretion of prolactin plus decline in-estrogen and progestrone levels bring out copoius secretion and in the presence of oxytocin ejection of milk ocurrs. Mammatropine is a lactogenic somatomammotropine. Reflex secretion of oxytocin intiated by touching the nipple and areola (milk ejection reflex). Milk ejection is normally intiated by neuro endocrine reflex. The receptors which are plentiful in the breast - especially around the nipple. Impulses generated in these receptors are relayed from the somatic touch pathway via bundles of SCHUTZ and mammillary peduncles to sypra-optic and para-ventricular nuclei. Discharge of the oxytocin containing

neurones causes liberation of oxytocin from posterior pituitary. The infant sucking at breast sitmulate the touch receptors, the nuclei are stimulated, oxytocin is released, milk is expressed to sinuses, ready to flow to the waiting infant. In lactating women genital stimulation and emotional stimuli also produces oxytocin secretion, sometimes causes milk ejection from the breast.

- Initiation of Location After Delivery:

The breasts enlarged during pregnency in response to high circulating level of estrogens and progestrone. Some milk is secreted into ducts as early as the fifth month but the amounts are small compared to sugar milk secretion that follows delivery.

A similar increase in milk follows abortion after fourth month, so expulsion in someway stimulate milk secretion - there is considerable speculation and contro-versy about the mechanism that intiate lactation. Prolactin secretion increases throughout pregnancy and remain high after delivery for about one week. There is avidence that the level of progestrone is high enough when estrogen is also present during pregnancy to

in hibit the effect of prolaction on the breast when plasma prgestrone , falls after delivery. This inhibition is presumbly removed the increase in circulating-glucocorticoids associated with stress and parturation is also said to contriute to the onset of lactation. Suckling not only evokes oxytocin release and milk ejection, it also maintains and augment the secretion of milk, probably in response to prolactin-secretion provoked by affarent neural stimuli from the breast.

(Ganong W.F. , 1978).

ETIOLOGY

ETIOLOGY OF THE BREAST CANCER

Human breast carcinoma is of unknown etiology but several strong etiological factors have been recognized.

There are familial and genetic, hormonal, enviromental, (radiation & nutrional), viral, and immunological factors.

A. Familial & Genetic:

Among all breast carcinomas, 15 : 30% appears to have some genetic background. Patients with family history develop the disease-early in life and frequently bilterally. The probability of bilateral breast carcinoma in familial cases is 60% , it is 12% in un-selected patient. (Sinkovics G. 1979).

The prognosis of familial breast carcinoma is not worse than that of unselected patient . Survival rates at 5, 10, 15 - years are slight (10%) better than the averge for familial breast carcinoma. This observation may be due to the higher incidence of medullary, lobular and well differntiated carcinomas in familial settings. First degree relatives of patients with premenopausal and bilateral breast carcinoma have 9.5 fold increased