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EFFICIENCY OF PREVENTIVE INTERVENTIONS FOR MANAGEMENT OF BREAST CANCER

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Abstract

Breast cancer is the second fatal cancer among women throughout the world with low survival rate and escalating incidence rate in developing countries such as India and low income countries . Different quality of care is available for patients suffering breast cancer depending on living area, some offering multimodality protocol based treatment but majority will undergo inadequate and inappropriate treatments. Awareness and preventive measures are options that will end with positive results toward better management of breast cancer. Identification of at risk individuals who have the hereditary as well as related risk factors will pave the ground for early detection and better management. This article entails the efficiency of preventive intervention for expedient and appropriate management of breast cancer.

Key words: breast cancer, prevention, intervention

Introduction: breast cancer a devastating disease is second ranking cancer among women throughout the world with escalating mortality and morbidity rate in developing countries.[who] Both sexes has the opportunity to develop the disease, , however its' occurrence in women are considerable, men breast cancer accounts for only 1% of all cases though being alcoholic, overweight, high life expectancy, presence and absence of breast feeding, family history is in direct relation with breast cancer, exact etiology of more than 40 percent are unknown (American Institute of Cancer). Treatment are available for breast cancer such as chemotherapy,

immunotherapy radiation and surgery. the stage of cancer plays significant role in treatment of disease and selection of treatment management, which mostly it detects at the late stages and affects surviving rate

Globally incidence of this disease has gradually increased in recent years which has raised concerns among women in general and health care professionals. Incidence rate varies in different countries, more than 2million cases were recorded in 2018 worldwide, which Belgium has the first ranking.[American institute of cancer]. United states of America had a significant decrease of death rate between the years 1989 and 2015 but no decrease was seen in incidence rate. Recent researches are witness of upward trend in developing countries which mainly depends on life style and increasing life expectancy, affecting the survival rate and mortality rate due to late stage detection and lack of screening and awareness programs.

Preventing breast cancer is a detailed but possible by various strategies such as targeting the risk factors which plays role in developing of disease. Some of risk factors are modifiable such as life style, diet, exercise and avoiding use of certain things such as tobacco, exogenous female hormones, ionized radiation and excess alcohol. Identifying individuals who cancer tends to evolve in their breast, medications that has been proven to be efficient and surgery are on hand interventional preventive methods. Moreover personal knowledge of risk factors, being familiar with body immune system and its role in developing and suppressing cancerous agents are contributory approaches of prevention.

Primary prevention

Preventing breast cancer by indentifying its risk factor and treating in way to decrease the risk comes under primary prevention that mostly involves modifiable risk factors. Alcoholism has been detected as a risk factor for developing this disease according to a study carried out by American cancer society that was evaluating the effect of smoking and alcoholism on developing breast cancer, results of this study showed a 24% higher incidence rate among smokers and alcoholic participant.[9] There has been association between obesity and other non communicable diseases as well as breast cancer, with higher risk of premenopausal estrogen receptor negative for breast cancer and triple negative breast cancer(TNBC).[10]

Ionizing therapeutic radiation is one of risk factors for developing breast cancer, it will increase the chance of disease if the exposure occurs between age of 10 to 14 years and has been said having this radiation after age 40 will have less negative outcome. Being exposed to radiation for treatment of Hodgkin lymphoma has been proven to increase the risk of developing breast cancer but no association marked for using radiation for treatment of breast cancer and increasing developing second breast cancer. More over mammogram and x- rays do not appeared to increase risk of breast cancer.

Studies from a randomized trial evaluating the risk of developing breast cancer with using exogenous estrogen as prolonged hormone therapy(HRT) after menopause showed increase in developing breast cancer. Women who used estrogen and progesterone for more than 5 years after menopause had higher risk of being diagnosed with breast cancer. Limiting the duration of HRT and using in specific indication will end with positive results for prevention. Indigenous hormones estrogen in particular plays role in developing this disease. Prolong elevated endogenous hormone as well as exposed to natural hormones such as hormones released by ovaries, early menarche, late menopause, late age of pregnancy, having no birth are associate with developing this disease. Breastfeeding is encouraged according to a study it reduced the chance of developing breast cancer by 4.3% for every 12 month breast feeding.

To prevent in primary level changing life style and health related recommendation will work. having healthy diet, regular exercise, controlling weight with BMI<30, encouraging breast feeding, avoiding tobacco and limit amount of drinking alcohol to one drink per day are efficient in reducing the chance of developing.

Chemoprevention

Risk assessment tools determines individuals' eligibility for chemoprevention. Risk assessment tools helps physicians to estimate a women's chance for developing breast cancer in upcoming five year and probability of developing in a defined age by using personal medical history, reproductive history and the existence of breast cancer in first degree relatives(mother, sister, daughter). Tamoxifin and raloxifin as selective estrogen receptor modulators (SERMs) with aromatic inhibitors(AIs) Examestane and anastrozole in randomized trials has reduced the incidence of breast cancer significantly for women at risk. Albeit AIs has no approval of US FDA and considered off-label but the efficiency of tamoxifin is approved and widely used for after menopausal women who are at risk, it reduces the relative risk approximately to one half for both pre and post menopausal women. Raloxifine had same risk reduction effectiveness as tamoxifine for postmenopausal women according STAR. Some studies indicates uterine cancer is associated with using tamoxifine but this harm is not seen in using raloxifine.A trial by national cancer institute of Canada after 35 months follow up showed 65% reduction in breast cancer risk in high risk postmenopausal women with taking examestane.

Although, the efficiency of chemoprevention is proved possible side effects such as thromboembolic events, endometrial cancer hot flashes and increase in need for cataract surgery is perceived to outweigh the benefits of pharmacological therapy and acts as barriers to uptake and compliance of chemoprevention. Lack of time and knowledge, challenges in identifying eligible individual for chemotherapy are other obstacles.

Surgical prophylaxis

Surgical interventions for preventing breast cancer and risk reduction is available such as prophylactic mastectomy and removing ovaries (salpingo-oophorectomy) will only consider for high risk women and women suspected genetic predisposition to breast cancer and carriers of BRCA1 or BRCA2 mutations. Currently HICs procedure of choice for preventing at high risks is mastectomy with breast reconstruction. Bilateral prophylactic mastectomy is the removal of both breasts with its included nipple-areolar complex(total mastectomy). 90 to 95% risk reduction was seen in women at moderate and high risk of breast cancer with total mastectomy procedure. Contralateral mastectomy in United States doubled in recent 6 years with regret rate of only 5 to 6 % .

Prophylactic salpingo-oophorectomy involves the removal of both ovarian with fallopian tube can be reserved for women with high risk of developing breast cancer after age of 35 and the completion of childbearing. PSO is mostly recommended for carriers of BRCA1 and BRCA2. according to a study in 2005, 56% reduction in breast cancer risk among BRCA1 carriers and it has also reduced the risk of developing ovary cancer. Effective results from PSO comes by carrying this procedure in early age, suggested ideal age for the procedure is 40- 45 years of age and after age of 50 did not significantly reduced the risk in women. Many factors are related to uptake of PSO like family history, personal history of breast cancer and mutation type. Despite having risk reduction effect PSO will have psychological effect for women who undergoes oophorectomy due to surgery related early menopause.

Radiography and screening

Radiography has its undeniable role in early stage detection of breast cancer. Mammogram which uses low energy X-rays around 30 kVp detects masses and micro calcifications of breast, gain recognition in 1950s and is prerequisites of health screening programs that aims to reduce the burden of breast cancer and its morbidity and mortality rate. Study carried out in United States to the trend of breast cancer from 1976 to 2008 found that screening program with use of mammogram increased the early stage diagnoses from 112 to 324 cases per 100000 women. Concomitantly late stage presenting decreased by 8%. Similarly study in Norway on mammography and its effect on mortality rate from breast cancer analyzed data form 4075 women and the result was reduction of 7.2 deaths per 100000 women as compared to past. Which indicates the association of mortality reduction and screening programs. Nationwide screening programs and a well functioning health care system will enhance the efficiency of this method.

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