The value of Mammography in increased survival rates in Breast Cancer

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In spite of improved surgical techniques, the advent of more sophisticated radiation equipment and techniques, and the use of chemotherapy and hormonal treatment, the survival rate from cancer of the breast still presents a dismal picture. The overall survival rate shows very little change today when compared with 20 or even 30 years ago.

Primary cancer of the breast with no evidence of glandular or other spread shows an overall five-year survival rate of around 80 per cent. Once spread to glands has occurred, the five-year survival rate drops to around 45 per cent. It is obvious, therefore, that if we are to improve matters the answer lies in earlier detection of breast cancer.

Regular visits to her doctor by all women over the age of 35 would improve matters, but physical examination by even the most experienced physician will fail to reveal a large proportion of small malignant lesions in the breast, and by the time the lesion is obvious, there is often secondary involvement of the lymph gland drainage of the breast with consequent marked reduction in the expected five-year survival rate.

Mammography was first introduced many years ago, but owing to technical difficulties, was largely abandoned, and for a long time soft tissue radiography was not enthusiastically accepted by radiologists. Modern mammographic equipment and techniques largely overcome this objection and the picture has now been dramatically altered, with the result that now mammography has an accepted place in our armamentarium for detecting early breast cancer. A special X-ray tube with a molybdenum, instead of a tungsten, target (which is used in the usual X-ray tube), with a very small focal spot, has been developed specifically for mammography. Equipment capable of low kilovoltage output (22 - 35 kv) along with special non-screen, very fine grain, film is essential for the production of good mammographic films. Anything short of this will lead to poor mammographic films and a consequent higher rate of diagnostic error on the part of the radiologist. With good technique a non-palpable lesion in the breast, as small as 0,5 cms, can be detected by mammography.

The role of mammography may be summarised as follows:—

As stated above, a small non-palpable growth in the breast can be detected by mammography. Numerous reports in the literature support this assertion, e.g., Egan in a study carried out at the M. D. Anderson Hospital and Tumour Institute, Houston, Texas, found 53 cases of breast carcinoma in 2 000 consecutive mammographies performed on 1 194 patients who had no suspected malignant lesion following examination by an experienced physician. In all 53 cases the diagnosis made by mammography was subsequently confirmed by pathological examination.

A malignant lesion can often be detected in an apparently healthy breast at a single mammographic examination, but are more often found as a result of serial examinations when enlarging masses or changes in the breast architecture can be spotted. Several screening studies have been reported in the literature, and all have demonstrated the value of serial examinations by mammography. One such study carried out by J. Gershon-Cohen at the Albert Einstein Medical Centre of Philadelphia, concerned a 10-year survey of 1 120 women over the age of 35 years, all free of any breast symptoms when the survey started. They had mammographic examinations at six-monthly intervals. By the end of the study, 36 malignant growths were found in 33 of the women (bilateral lesions were found in three of the patients). The average size of the lesions was 1,1 cms, ranging from 0,4 cms to 3,5 cms. Of the 36 malignant growths found, 20 had no physical signs and were not suspected by the clinician who examined them before mammography was carried out. Thirty per cent. of the cases had axillary metastasis, so that an 80 per cent. 5-year survival rate could be expected in the remaining 70 per cent.

These and other studies carried out indicate a very good reason why every women over the

age of, say, 35 years, whether complaining of breast symptoms or not, should be examined by mammography, preferably every six months, but at least once a year. Carried out efficiently and with good technique and equipment, the radiation dose which the patient receives is small and constitutes no health hazards.

When women realise that an easy, painless method of diagnosing lumps in the breast is available, they will be more willing to consult their doctor earlier, especially when they realise that about 80 per cent. of lumps in the breast will prove to be non-malignant and that they will thereby be saved the anxiety and inconvenience of a biopsy to determine the histology of the lump.

Another compelling reason for mammography is examination on the remaining breast in patients who have had a unilateral mastectomy for carcinoma of the breast. Clinical examination of such breasts will often fail to reveal a small growth. Byrne, Bringhurst and Gersonh-Cohen carried out a study in which 102 such patients were examined at regular intervals for nine years. Six malignant growths were found in the remaining breast of these patients and in only one instance was the growth palpable when it was found radiologically.

A malignant non-palpable growth can be detected in the apparently healthy breast contralateral to the one which brings the patient to her doctor. A bilateral mammogram should, therefore, always be carried out.

Detection of breast cancer improves when the clinician and radiologist closely collaborate. Working together, the correct diagnosis of cancer of the breast is of the order of 90 per cent. The radiologist working alone will have an error rate of the order of 15 per cent., while the rate rises to 30 to 35 per cent. when reliance is placed on physical examination alone.

Mammography can also be of considerable help in accurately localising a lesion in the breast which is to be excised for histological examination. Post-operative mammography should also be carried out if the pathologist is unable to confirm a pre-operative radiological diagnosis of a malignant lesion since the actual lesion demonstrated by mammography may not have been resected.

References

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