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Side-effects of Screening

Ian W.H. Garstin, Zvi Kaufman, Michael J. Michell, Anne Rodway, S.R. Ebbs and M. Baum

There has been a 42% increase in the number of mammograms performed outside the national screening programme (operating in Camberwell, southeast London) which was not anticipated in the Forrest Report, a document to the Health Ministers of the U.K. by a working group chaired by Sir Patrick Forrest [1]. The report compiles recommendations on breast screening, using mammography and breast self-examination, to reduce the mortality in women aged 50–64 years [1]. This 42% increase is attributable mainly to referrals from menopause clinics and general practitioners of patients mainly in the screening age group. When we looked at referrals from general practitioners, suspicious mammographic findings were reported in 20% of patients referred with a breast lump, in contrast to only 4% of patients referred with breast pain or nodularity. Better education of both the public and general practitioners, concerning the signs and symptoms of breast cancer, may reduce demands to perform mammographies outside the current national screening programme.
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INTRODUCTION

IN AN attempt to reduce the mortality from breast cancer, routine mammographic screening in accordance with recommendations laid down in the Forrest Report [1], a document to the Health Ministers of the U.K. by a working group chaired by Sir Patrick Forrest, has been in operation in the Camberwell district of southeast London for approximately 18 months.

It has been our impression that there has been a substantial increase in the number of referrals in symptomatic women for mammography, creating an extra work load which was not originally anticipated in the Forrest Report [1].

In an attempt to validate our beliefs, we analysed the sources, the reasons and the outcomes of all referrals for mammography outside the screening programme.

MATERIALS AND METHODS

The hospital records of all requests for mammography outside the current screening programme (which is centred in Camberwell for the southeast district of London under the provision of the Forrest Report) were examined. It is stressed that these referrals were to the mammography unit and were separate from the current screening programme. The age of the patient, reason for referral and mammogram report were recorded in the subgroup referred from general practitioners (GP). Correlation between reasons for referral and patient complaints were obtained from each patient. If there was more than one reason the main problem was used in data analysis. The screening programme commenced in February 1988 and, at the time of investigation, had been in operation for approximately 18 months. Referrals during this time and for a similar period of time immediately before screening were recorded.

During the period of study, there were no changes in referral criteria for mammography. The referrals were from the same group of GPs before and during screening and, therefore, any increase was not a reflection of an increased population at risk from a larger catchment area. Referrals at the time of analysis were not affected by the present White Paper reforms within the National Health Service. Open access was available to both GPs and women attending the menopause clinic.

RESULTS

Between February 1986 and the end of July 1987 (before the start of the current screening programme) 1933 women were referred for mammography. The number of referrals after screening had commenced, during an identical period of time from February 1988 until 31 July 1989, was 2744 (an increase of 42%). The number of referrals from surgical outpatients and from the radiotherapy clinic remained approximately the same, however, substantial increases in referrals from menopause clinics and GPs were noted (Fig. 1).

Of the 614 referrals from GPs, the reason for referral was clear in 173 patients prior to screening and in 347 patients after screening had commenced. The main reasons for referral are listed in Table 1. They were reported as normal, or as having benign or suspicious changes present. The results of these mammograms in patients referred from GPs with a lump, breast pain or nodular breasts, before and after the onset of screening are shown in Fig. 2a–c. Over 40% of mammograms in women with a breast lump were reported as normal before and during screening, in contrast to women referred with breast pain or nodularity in which at least 80% of X-rays were reported as normal.

In contrast, between 15 and 23% of mammograms were

Correspondence to I.W.H. Garstin at the Department of Surgery, University Floor, Belfast City Hospital, Belfast BT9 7AB.
Z. Kaufman, A. Rodway, S.R. Ebbs and M. Baum are at the Department of Surgery; and M.J. Michell is at the Department of Radiology, King's College Hospital, Denmark Hill, London SE5 9RS, U.K.
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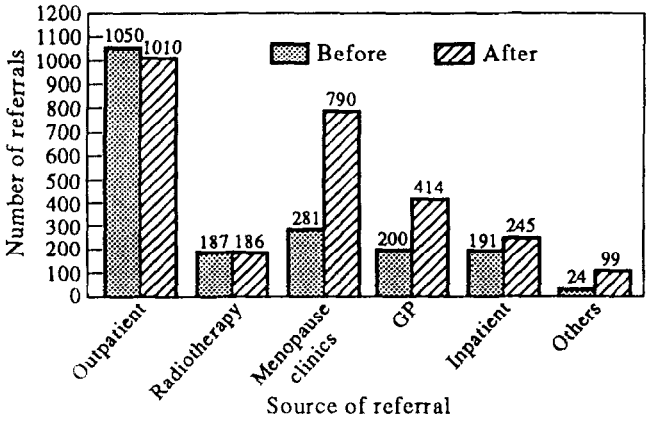

Fig. 1. Numbers and sources of referrals for mammography in symptomatic women before and after initiation of screening.

Table 1. Reason for referral from GPs before and after initiation of screening

	Prescreening period	Screening period
Total	200	414
Reason		
Pain	65	130
Lump	57	77
Nodularity	23	44
Other*	27	96
No clear reason available	27	67

* Family history, nipple discharge, breast asymetry, anxiety.

reported as suspicious in patients referred with a breast lump, compared to 4% of those referred with pain or nodularity.

DISCUSSION

Our initial impression of an increased number of referrals for mammography in symptomatic women after the start of the current breast screening programme is confirmed by this study. A 1.1- and a 1.8-fold increase in referrals from GPs and from the menopause clinic, respectively, are mainly responsible for the 42% increase in the total number of referrals. Referrals from GPs who have open access to mammography were examined in detail.

Breast pain, a lump in the breast and nodular breasts were the most frequently stated reasons for referral in request forms. Suspicious mammographic findings were reported in approximately 20% of patients with a breast lump, compared to only 4% of patients presenting with breast pain or nodularity. In only 40% of patients with a lump were mammograms reported as normal, in contrast to over 80% of mammograms of patients with breast pain or nodularity. Referral of patients with a breast lump would, therefore, seem reasonable. However, as there is a danger that some of the 40% of patients with normal mammograms may be falsely reassured, referral of these patients to a breast clinic should be mandatory, especially as up to 12% of cancers are not demonstrated by mammography [2]. In only approximately 4% of patients referred with either breast pain, nodularity or various other reasons was the mammogram reported as suspicious. It is of interest that the number reported as suspicious decreased from 6.5% before screening to 2.3% after the start of screening. This may be due to better radiological techniques, such as the use of compression or magnified views and ultrasound, enabling more confident diagnosis of benign

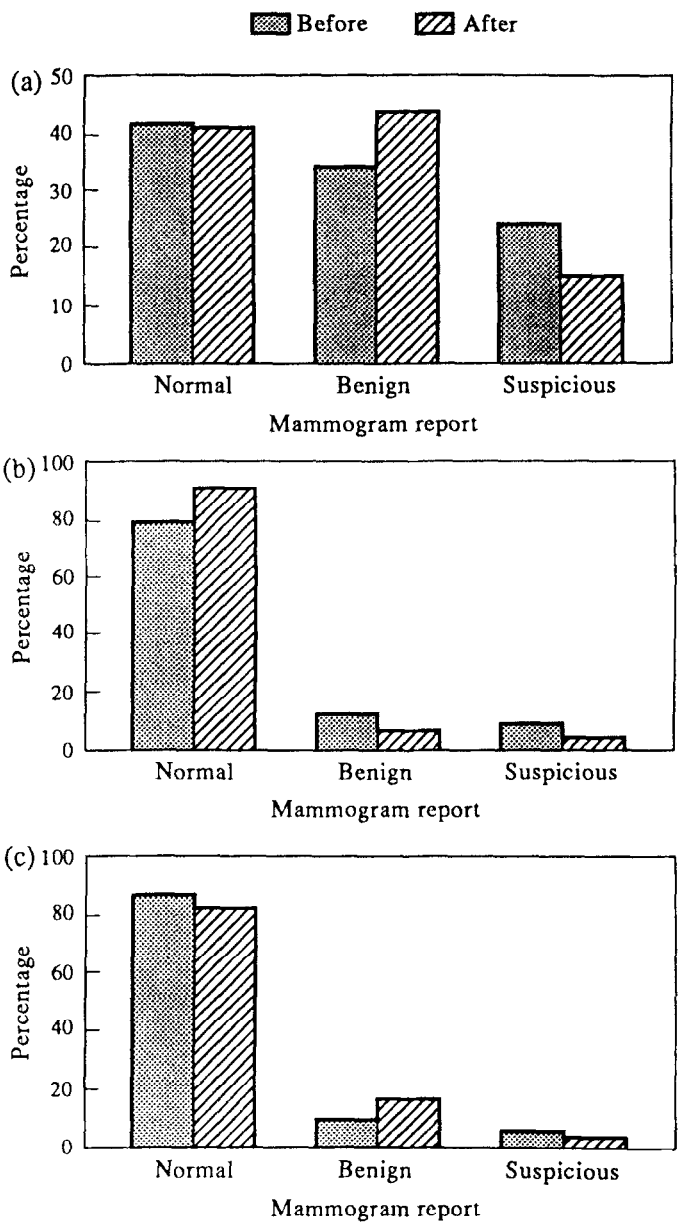

Fig. 2. Percentage of mammograms reported as normal, benign or suspicious in women referred from GPs with a breast lump (a), breast pain (b) or breast nodularity (c) before and after initiation of screening.

disease. Our findings are confirmed by recent reports from Devitt *et al.* [3] who assessed the morbidity associated with false alarms of breast cancer in 2923 consecutive consultations for a breast disorder. Eighty-seven per cent of signs or symptoms of breast cancer were false alarms. Only 8% of 224 accidentally-found breast cancers were associated with pain. Our results suggest that patients with pain or nodularity should be treated or referred by GPs without recourse to mammography.

Patients attending the menopause clinic in this district are not routinely referred by their gynaecologist for mammography prior to hormone replacement therapy (H.R.T.). The increase in the number of referrals from the menopause clinic is partly due to a change in the attitude of the gynaecologists, in terms of alteration of policy on the needs of mammography prior to starting H.R.T. Approximately 500 of these mammograms were examined during the screening period and three carcinomas were detected. This is in keeping with the seven carcinomas per

1000 screened we would expect to detect during prevalence screening.

We are concerned that most women attending these menopause clinics are in the same age group as those invited to attend screening. The mean age of referrals from GPs was 50 years. The consequence of this is that double screening may take place, or that this 'preliminary screen' may give the women a false sense of security. This may make them less likely to attend routine screening. Current evidence indicates no definite increased risk of breast cancer with H.R.T. [4] and our results show that the group of women presenting for H.R.T. do not yield a higher incidence of breast cancer than the general population. H.R.T. does not appear to influence the outcome of breast cancer.

In Camberwell, the number of women attending mammographic screening to detect breast cancer is less than the 70% compliance projected in the Forrest Report. The purpose of this review is not primarily to address this problem, but we believe that if women, aged 50–64 years, attending menopause clinics were encouraged to enter screening programmes as recommended, attendance would improve. We are aware of the pressures and demands made upon GPs to request mammography, but we also believe that if patients with symptoms of pain and nodularity between the ages of 50–64 years were also encouraged to enter the screening programme, attendance figures would improve still further. However, it must be conceded that the 723 extra mammograms performed after initiation of screening requested from GPs and from the menopause clinic, is small compared to the total number of women invited for screening. Every effort must be made to improve overall attendance. However, for many reasons, such as anxiety, breast symptoms often represent a severe problem to the patient. A better approach to this situation may be further education of both the public and GPs about the signs and symptoms of breast cancer.

1. Breast Cancer Screening. Report to the Health Ministers of England, Wales, Scotland and Northern Ireland, by a Working Group chaired by Professor Sir Patrick Forrest.
2. Locker AP, Manhire AR, Strickland V, Caseldine J, Blamey RW. Mammography in symptomatic breast disease. *Lancet* 1989, 887–889.
3. Devitt JE. False alarms of breast cancer. *Lancet* 1989, 1257.
4. Armstrong B. Oestrogen therapy after the menopause—boon or ban? *Med J Australia* 1989, **148**, 213–214.

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Biological, Physical, Mental and Social Dimensions of Breast Cancer: Information Based on Routine Case Notes

Kaija Holli and Matti Hakama

551 patients were diagnosed with breast cancer in Tampere University Hospital district, Finland between 1977 and 1980. The number of follow-up visits during the first 5 years was 8248. The biological, physical, mental and social dimensions of breast cancer were measured by death, recurrence of disease, Karnofsky score, physical or mental symptoms, and sick leave. The prevalence rates of an event and the incidence rates of the appearance or disappearance of an event were used to determine the indicators for these different dimensions of breast cancer. The study was based on hospital case notes. Data on death, recurrence, sick leave and Karnofsky score were well recorded, but physical or mental symptoms were recorded infrequently. There was a 4-fold difference between the highest and lowest prevalence for the different dimensions, but the trends were similar by follow-up time. The variation was also large for the incidence rates but the trends differed with length of follow-up time. The biological, physical, mental and social consequences of breast cancer differ in magnitude and have different trends over time, indicating that breast cancer is a different disease depending on the dimension and on the indicator under consideration.
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INTRODUCTION

AS A RULE, the course of breast cancer is described in terms of death rates, recurrence rates or an indicator describing the biology of the disease. In fact, breast cancer covers a variety of different dimensions, of which the biological aspect is only one. Sometimes quality of life indicators are also used [1–3]. These characterise the patient and her mental reaction to the disease or its treatment, or describe her social environment [4–6]. The disease and the patient are usually separated from each other by such dimensions. In this report we will call them physical, mental and social dimensions.

Furthermore, any one of these dimensions can be described by a variety of indicators. Death is traditionally described in terms of mortality or survival rate, whereas symptoms and other indicators, which are not absorbing states, are described by prevalence rates. In principle, however, all these dimensions can be described by a prevalance rate or by an incidence (i.e. mortality for death) rate.

This study describes ways of evaluating these different dimensions of breast cancer, and of establishing whether the course of the indicators describing each dimension is of similar magnitude and constant over the follow-up time. The material is based on