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Breast cancer screening: Should it be introduced and how?[1]

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"Epidemiology is the basic science of public health". This quote by Jerry Morris was used in the context of evaluating programmes for the reduction of cardiovascular disease. In the following thoughts on the criteria for evaluation of breast cancer screening programmes I should like to consider the epidemiologic evidence from the point of view of the public health gains through mammacarcinoma screening. The following points should be looked at:

- Who should be screened?
- How should the screening be conducted?
- What do we know about the efficiency and effectiveness, and about the side-effects, of the various programmes?
- And last but not least, what recommendations can be given today to our population or to individual women?

The basic principles which should be fulfilled before introducing a screening programme were originally established by WHO [1]. A new criterion has been added for the judgment of mammacarcinoma screening: apart from being easy, inexpensive and effective, it should not produce fear [2]. This last point has not often been taken into consideration when different programmes have been compared.
What evidence should be looked at before a screening programme can be considered to be efficient and effective? The most conclusive evidence comes from controlled experiments; this means, in the case of screening, from randomized trials. Other evidence can come from uncontrolled experiments; either from geographical comparisons or from observation of time-trends, and the last possible source of evidence is from cohort or follow-up studies [3].
A recent review has summarized the most important studies conducted on this topic [4]. The evidence from randomized trials is much less strong than that from follow-up studies of acceptors of screening only. This difference highlights the problem of screening for breast cancer: it seems that studies of acceptors only miss a considerable number of subjects with very high risks, who can be found in the randomized trials, and who increase the relative risk in these trials. The question therefore remains open whether it is not a particularly low risk group which participates in the studies on acceptors only. In other words, perhaps the effort should be geared towards the non-acceptors rather than the acceptors of screening. However, criteria establishing who the high risk non-acceptors are seem difficult to define. The Finnish study did not identify any social class, age group or occupational group in which the participation rate was particularly low. However, their acceptors showed a considerably lower overall risk than the risks which are described in randomized trials.

Who should be screened?

Who should be screened? Screening in all studies described is offered to women between 40 and 65 years; some studies go up to 74 years [5, 6].
The Swedish two county trial [5] provides the best evidence of any randomized trial. It is interesting to note that women up to the age of 74 were included. Are the differences between this and other studies that in higher age groups the risk is higher? Should we therefore conclude that all women should be screened up to the age of 75? No consensus seems to have been reached about this, and usually screening is only recommended up to the age of 65.

Systematic screening versus unsystematic screening

But can we discuss the issue of the methods of screening in absolute terms? The problem at the moment is not whether screening is to be done or not done, the question is rather whether it is done in a systematic way or in an unsystematic way and if it is done in an unsystematic way, whether it does not then miss exactly the high risk cases. A further question is whether the quality of screening is good enough to justify its costs. The situation of Switzerland today is one in which unsystematic screening takes place, and there is no quality control. Little is known about whether high risk women are actually participating in the screening, and therefore whether the screening has any effect at all.
One of the advantages of the Finnish study reported in this issue is the systematic training of

[1] Paper presented at a symposium on „The Public Health Perspective of Social and Preventive Medicine", in celebration of the 20th anniversary of the Department of Social and Preventive Medicine, University of Berne, 25 June 1992 in Berne.

radiologists to judge mammographies, and this is also the advantage of the programme to be introduced in the canton of Vaud. Every mammography will be viewed by two independent radiologists specially trained for this purpose. Obviously this was done in all the studies quoted and it illustrates the problem of generalizing study results into public health action when the quality control is not as it was during the study time.

If screening is to be introduced, the question arises of which method is to be used. In general, the discussion is about mammography only. The Finnish study brings in a new point of view by trying to evaluate the effect of breast self-examination [7]. Of course, this programme is combined with systematic mammography and systematic training of radiologists to view the mammographies. It involves educating women to get to know their own breasts, so they can judge any alteration. The study on acceptors shows exceptionally good results. Unfortunately, no randomized comparison is made and no data on non-acceptors are available. This again makes the study difficult to assess, in spite of the fact that no specific selection in terms of age or social class could be found in the evaluation. The usual conclusion in this case would be: "conduct a randomized trial". The more common conclusion should be: with the evidence available at the moment, what strategies should we choose?

The evidence based on mortality is strong enough to suggest that systematic screening for breast cancer with mammography can reduce breast cancer mortality. Therefore screening programmes can be introduced.

The study by Gästrin in this issue [7] suggests that with breast self-examination and systematic mammography mortality could be further reduced and unnecessary radiographies could be avoided. The costs of screening could thus be reduced. Also and this is an important additional point the Finnish study showed that anxiety of women could be considerably reduced, a woman who felt a knot in her breast would be more confident that it might well be at a stage where it could be cured.

Dr. Gästrin has tried to evaluate anxiety in her study. But can we argue with anxiety when we have evidence for survival? Information about treatment and the attention given to women with positive mammographies, play an often underestimated role in reducing anxiety, and should be studied in future trials.

Recommendation (a personal view)

When the cost of screening programmes is discussed it ought to be compared to that of the uncontrolled screening which is taking place anyway in our setting. Probably it is more efficient to spend money on a controlled screening programme in which results can be evaluated than on uncontrolled, and perhaps sometimes qualitatively unsatisfactory, screening.

To conclude, I should like to see a randomized programme in the canton of Vaud [8] in which half the women to be offered the screening in the mammography screening programmes are also offered the self-examination approach, on which the canton of Vaud has had a programme before [9]. Perhaps in this way the programme in the canton of Vaud could not only add further evidence about the use of systematic screening, but introduce a new component in it, and in this way help women to cope with this very difficult problem better.

Summary

This brief discussion of the papers by Gästrin and Paccaud is looking at differences in the results of different study types. Introducing screening means changing unsystematic to systematic screening: only the latter has been shown to be effective. The comparison between randomized trials, and follow-up of acceptors only, suggests that the non-acceptors have much higher risks. Programmes should therefore concentrate on trying to reach non-acceptors. The combination of mammographic screening and self-examination in a randomized trial could add to the existing evidence.

Résumé

Faut-il systématiser le dépistage du cancer du sein? Si oui, de quelle façon?

La brève discussion des articles de Gästrin et Paccaud porte sur la diversité des résultats obtenus lors d'études de types différents. En introduisant le dépistage, le dépistage non-systématique fait place à un dépistage systématisé, qui s'est révélé être efficace. La comparaison entre des essais randomisés et des études de suivi chez des femmes acceptant le dépistage suggère que les femmes non-soumises au dépistage ont un risque plus élevé. Les nouveaux programmes devraient porter leur attention sur la motivation de ces femmes à haut risque. La combinaison du dépistage par mammographie et de la palpation du sein par la femme elle-même pourrait, dans le cadre d'un essai clinique randomisé, apporter des éléments complémentaires renforçant l'evidence déjà existante.

Zusammenfassung

Mamma-Karzinom Screening: Einführen und wenn ja, wie?

Die Diskussion der beiden Arbeiten von Gästrin und Paccaud befasst sich mit den Unterschieden

zwischen systematischem und unsystematischem screening: Nur ersteres hat in der Vergangenheit Effekte gezeigt. Nachuntersuchungen von Frauen, welche Screening akzeptiert haben, zeigen bessere Resultate als die randomisierten Studien; dies weist darauf hin, dass Frauen, welche in unsystematischem Screening nicht erfasst werden, ein höheres Risiko haben. Neue Programme sollten deswegen unbedingt darauf achten, auch diejenigen Frauen für Screening zu gewinnen, welche sonst nicht kommen. Die Kombination der zwei Ansätze: Mammographie Screening und Selbstuntersuchung der Brust in einer randomisierten Untersuchung könnte wichtige Hinweise zur Ergänzung der bestehenden Evidenz geben.

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