6 INVITED

MR guided techniques

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Contrast-enhanced MR imaging is frequently used as an adjunct to mammography and sonography in selected indications, mainly for preoperative staging for exclusion of multifocality, multicentricity, and bilateral tumor. Since up to 70% of lesions detected by MR are clinically, mammographically, and sonographically occult, MR-guided needle localization and core biopsy techniques have become increasingly important.

Freehand MR localization techniques and CT-guided techniques are not sufficiently accurate, and the use of targeted sonography and US-guided biopsy bears a risk of false-negative results, although retrospective visualization of MR-detected lesions has been decribed in 23% of cases.

Other previously described MR-guided interventional procedures include stereotaxic localization in supine position using a ring coil with a plate with multiple puncture channels, localization techniques using frameless stereotactic systems, and localization on open MR units. More recently, various open breast coils for MR-guided breast interventions in prone position have become available. Most systems use perforated or fenestrated compression plates or compression devices consisting of flexible plastic ribs which allow free access of the needle to the breast for a latero-medial and/or cranio-caudal approach. The targeting devices use external reference markers, and computer-assisted calculation of lesion coordinates is available on the more advanced devices.

Major limitations associated with all interventional techniques include lack of direct visualization of the needle during the localization procedure on closed magnets, and – since the visibility of lesions depends mainly on contrast enhancement – impossibility to confirm adequate tissue sampling after core biopsy. Therefore, MR-guided breast interventions have been mainly limited to wire localizations and core biopsy of lesions measuring more than 10 mm in diameter. At the Department of Diagnostic Radiology of the University Hospital in Innsbruck, phantom measurements with a stereotactic localization device showed a mean deviation of the needle tip from the lesion center of 2.7 mm (SD; 1.49 mm). MR-guided 14 G core biopsy results obtained in 38 lesions measuring 9–15 mm were consistent with excisional biopsy in all cases.

Recently, targeting devices for MR-guided vacuum biopsy (VB) have become available. An European multicenter study which included 341 lesions showed an overall rate of success of 98% at a severe complication rate of less than 2%. Our preliminary experience with so far ten patients confirm these favourable results. MR-guided VB appears to be the modality of choice for the assessment of MR imaging-detected lesions measuring less than 10 mm.

7 INVITED

Results from Sweden

Abstract not received.

8 INVITED

Results from Great Britain

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The Breast Screening Programme in the UK began in 1988 following the advice of the "Forrest" report which recommended its introduction[1]. The programme began by screening women aged 50–64 every three years with a single view (medio-lateral oblique). By 1996 the programme had invited all women in the UK in the target age group at least once. Acceptance rates of over 70% were initially obtained, which rose to 75% and have been maintained[2]. The quality of screening, when compared to the reported Two Counties' results was not high enough in the early years of the programme, despite widespread use of two views, to make much of an impact on mortality. The detection rates have, however, risen steadily over the years. The introduction of two views at the first screen was estimated to increase the small cancer detection rate by 42% recently this has led to the introduction of two views at every screen[3]. A further change is the extension of the screening programme to include women up to 70[4].

The changes to the programme's protocols together with the expansion in the age group due to demographics means a current 40% expansion in workload. This expansion in workload will continue for another 20 years. In order to meet the challenge that this poses, new ways of working have had to be devised, including doctors passing on to radiographers tasks such as film reading and needle biopsy.

Breast cancer mortality in the UK was the highest in Europe, but is now seeing a steep fall. One third of this fall is attributed directly to the screening programme[5]. It is nevertheless accepted that the fall is mostly due to improvements in treatment, facilitated by a reorganisation of breast services consequent upon the introduction of breast screening.

References

[1] APM Forrest (Chairman) Report to the Health Ministers of England, Scotland, Wales and Northern Ireland on Breast Cancer Screening. HMSO, London, 1986.

[2] Patnick J (Ed) Serving Women for 15 years: Annual Review of the NHS Breast Screening Programme 2003.

[3] Blanks RG, Moss SM, Wallis MG. Use of two view mammography compared with one view in the detection of small invasive cancers: further results from the National Health Service breast screening programme. J Med Screen. 1997;4(2):98–101.

[4] The NHS Cancer Plan. A plan for investment, a plan for reform. Department of Health, London, 2000.

[5] Effect of NHS breast screening programme on mortality from breast cancer in England and Wales, 1990–8: comparison of observed with predicted mortality. Blanks RG, Moss SM, McGahan CE, Quinn MJ, Babb PJ. BMJ. 2000;321(7262):665–9.

9 INVITED

Results from The Netherlands

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Background: More than a decade ago, the mammography screening programme for women aged 50–69 years was initiated in the Netherlands. Our aim was to assess the effect of this programme on breast cancer mortality rates.

Methods: We examined data of 31,883 women who died of breast-cancer aged 55–74 years between 1980–2002, grouped into 93 clusters depending on where they lived, by use of national population statistics. We analysed trends in breast cancer mortality, adjusting for gradual implementations at municipality level, taking as year 0 the month and year in which screening began in a particular municipality. We used the Poisson regression model to estimate the time point at which the trend started to turn and assessed, indirectly, whether this turning point was related to initiation of screening or adjuvant systemic therapy in four separate clusters defined according to when screening was implemented.

Findings: Compared with rates in 1986–88, breast cancer mortality rates in women aged 55–74 years fell significantly in 1997 and subsequent years as predicted, reaching −19.5% in 2002. Mortality rates had been increasing by an annual +0.3% until screening was introduced; thereafter we noted a decline of −1.7% per year (95% CI 2.39 to 0.96). The turning point in mortality trends arose at around year 0. Adjuvant systemic therapy is unlikely to have affected mortality rates, since they continued to rise up to 1 year after implementation in municipalities where screening began after 1995.

Interpretation: Routine mammography screening can reduce breast-cancer mortality rates in women aged 55–74.

10 INVITED

Results from Finland

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The first pilot of breast cancer screening was started in Finland (population 5 million) in 1982, and the screening programme has been run nation-wide since 1987. According to a decree on public health (1992), the Finnish municipalities have to maintain BC screening for women aged 50–59 years. Screening can be continued in ages 60–69. Women are invited biennially, with help of population registry. In 2000, invitational coverage was 99.7% among 50–59-years old women. However, among 60–69-years old women only one third of the municipalities organised BC screening. Screening is free of charge for women. Two-view mammograms are performed, and all screening mammograms are reviewed by two radiologists. About 200,000 women are invited each year, and the attendance rate has been close to 88%. On average 3% of the screened women are recalled for further examinations, but with meaningful variation between some centres. Using data since 1991, the detection rates compared with the expectation without screening have been above the recommendation in each centres.

High attendance in BC screening has associated with social support, attendance in gynaecological service, perceptions on breast cancers and health, and beneficial perceptions for mammography. About one third of non-participants have reported another recent mammogram. Those with no mammograms use healthcare services less frequently, are socially more isolated and depressed, and more often smokers.

A group-randomised design was built in the programme during the first few years. An evaluation of the programme at its initiation showed a

reduction of 24% in BC mortality among those invited, compared with the non-invited controls. A later non-randomised refined mortality study in Helsinki, the capital of Finland, has demonstrated 19% decrease in BC mortality due to screening. In the latter study there was no effect on incidence of non-localised breast cancers; and an over-diagnosis estimate of 18% was obtained. To clarify over-diagnosis, further follow-up of incidence is needed in order to collect more years since the last screen. Proportions of interval cancers have varied between 22%-36%, depending on the proportions on first/subsequent rounds and whether adjusting for over-diagnosis. The routine incidence and mortality statistics are available nowadays up to 15 years after the start of the nation-wide programme. BC incidence rates have been in a continuous increase. Mortality figures have been in a slight increasing trend up to 1990s, but they have started to decrease during the 1990s. The routine age-specific mortality trends do not show clear effects of screening, partly because of the rather narrow age-band invited regularly. Finland provides experiences to call for proper design and evaluation methods when implementing an organised screening programme.

11 INVITED

Breast Cancer Screening in France – Evolution from pilot projects to a national programme

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The first experiences in breast cancer screening began in France in 1989 with 6 pilot projects. The aim was to find the best methodology adapted to the french health system. The basis has been to use existing public and private structures and obtain a motivation of the target population involving the GPs and the gynecologists. Because of the decentralized system it has been mandatory to implement a quality assurance programme including the double reading of all the mammograms, the regular quality control of the equipments, the training of the professionals, and a continuous evaluation of the performance and impact indicators. Two programmes ADEMAS and ARCADES were involved in the European Breast Cancer Screening Network.

During the first pilot phase 1989–1993, ten programmes were launched in France by the ≪ Caisse Nationale d'Assurance Maladie ≫ (CNAM) on an experimental basis. In 1994 a national screening programme was initiated and 19 new districts were added between 1994 and 1999 on the basis of a national protocol led by a National Committee for breast cancer screening. In 1999 new recommendations were published by ANAES, the National Agency for Accreditation and Evaluation in Health (2 views every 2 years for women aged 50–69 followed till 74).

Considering the situation in France: high levels of spontaneous screening, ongoing competition between organised and spontaneous screening, high number of radiology centres, activities of both screening and diagnosis in all the centres, a new strategy for a decentralized programme has been implemented. Simultaneously, the health ministery announced the breast screening coverage of the whole french population for the first january 2004.

The new national protocol published in november 2001 progressively takes place in the old and new districts. The aim is to obtain an equal access for all the women, aged 50 to 74, to a highly efficient homogenous screening programme and free of charge. This needs the progressive reduction of the spontaneous screening and the involvement of the radiologists, the GPs and the gynecologists. For this aim, the price is the same for screening and diagnosis procedure. The test includes clinical examination and 2 views +/– additional imaging. A second reading is centralized performed by trained radiologists. In case of abnormal results an immediate assessment is performed. The test is performed only by an accredited trained radiologist with a quality certified equipment in private or public centres.

A very important and rapid implementation is observed. The first aim of providing an homogenous good quality mammography seems to be obtained. We have to wait more time to estimate all the impacts of this programme in terms of cancer detection, morbidity and cost-effectiveness.

12 INVITED

Results from Germany

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In Germany traditionally a large volume of unorganized breast cancer screening has been taken place in private offices. It has been estimated that 68% of the mammograms needed for a program with two years interval and an uptake of 70% have been performed in the age group of 50 to 69 years nationwide in the year 2000. First attempts to improve the quality of this unorganized screening in the German Mammography Study have been judged to have been insufficient in 1993 by international experts.

In 1998 the Federal Committee of Physicians and Health Insurance Funds initiated model projects, which were to develop and evaluate organized mammographic screening with strict adherence to the European Guidelines for Quality Assurance in Mammography Screening. The first two projects in Bremen and Wiesbaden started in 2000, a third project in a rural area of the Weser-Ems region followed in 2001.

These projects started screening with support from European experts in 2001 and 2002 respectively. After two years 95 497 women have been invited in the three study regions. 52 905 women from the target population have attended (55%, EU recommendation: 70%). Of the women, who attended, 6% were recalled to assessment (EU recommendation: < 7%). Preoperative biopsies were obtained from 2% of the participants (currently no EU recommendation(. The cancer detection rate was 9/1000 (EU recommendation: 8/1000, based on background incidence). 17% of the detected cancers were DCIS (EU recommendation: 10–20%). The proportion of invasive cancer ⩽10 mm diameter was 35% (EU recommendation: ⩾20%). The results in all three pilot regions are quite similar.

Key performance parameters of the European Guidelines for Quality Assurance in Mammography Screening have been met. The uptake of about 50% in the large cities of Bremen and Wiesbaden and between 60 and 70% in the rural area of Weser-Ems, though falling short of the 70% target of the European Guidelines, must be judged excellent for the first round of a program in a country with such a high amount of unorganized mammography. The experiences from these model projects have been the basis for the formulation of the new nationwide program, which is organized within the structure of the existing health care system, where private office-based physicians are responsible for ambulatory health care. This program will strictly adhere to the European Guidelines in every aspect. It is ambitiously targeted to achieve full coverage of the country until the end of 2005.

13 INVITED

European benchmarking

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The European Breast Cancer Network (EBCN) has supported since 1989 the extension of quality mammography screening throughout Europe. The Network, funded till 2002 by the "Europe Against Cancer Programme" of the European Commission, has recently described the status of breast cancer screening in member states and a paper is about to appear on screening performance parameters in ten programmes from six countries.

Some of EBCN activities deal with building public domain tools for monitoring performance parameters in breast cancer screening and care. This is the focus of my presentation.

One of these tools is the so-called European Screening Evaluation Database (EDB). The European Guidelines on QA in Mammography Screening define a number of process and early impact measures that each programme should monitor, with suggested targets. A comparison of these parameters among programmes delivering service screening throughout Europe is likely to produce more valid results if based on the analysis of a common set of individual data, for the following reasons:

- the process of collecting individual data in several centres makes it necessary to use common definitions and rules which are likely to improve the consistency of results, compared to aggregated data;
- data analysis and calculation of parameters on the common data set, as opposed to several analyses performed independently at each of the screening programmes, reduce errors depending on differences in the analytical approach.

The EDB is a web database including a minimum data set and capable of calculating European screening performance parameters. It has been piloted by nine screening programmes in five countries and, if further supported and maintained, could become accessible to any programme in Europe wishing to evaluate its own data in a standard format. An overview and a link to the EDB web site is at www.ebcn.org.

The breast cancer screening movement has been concerned not only with quality of mammography but also with timeliness and appropriateness of subsequent management and care. For this reason, within EBCN has also been developed the QT (Quality of diagnosis and Treatment) Audit System, which is now used by clinical Units throughout Europe and has been endorsed by the European Society of Mastology. A recent project conducted in several European countries found wide variations in diagnostic procedures following screening: results will be shown. QT is available at www.cpo.it/qt or www.eusoma.org.