

6

INVITED

**MR guided techniques**W. Buchberger. *Universitätsklinik, Innsbruck, Austria*

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 described in 23% of cases.

Other previously described MR-guided interventional procedures include stereotactic 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

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**Results from Sweden**

Abstract not received.

8

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**Results from Great Britain**J. Patnick. *NHS Cancer Screening Programmes, Sheffield, UK*

The Breast Screening Programme in the UK began in 1988 following the advice of the "Forrest" report which recommended its introduction<sup>1</sup>. 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<sup>2</sup>. 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<sup>3</sup>. A further change is the extension of the screening programme to include women up to 70<sup>4</sup>.

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<sup>5</sup>. 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**

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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

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**Results from Finland**A. Anttila. *Finnish Cancer Registry, Helsinki, Finland*

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