

Scientific Sessions

10:30 - 12:00

Room K

Radiographers

SS 214

Optimising mammography

Moderators:

M. Marolt Music; Ljubljana/SI
D. O'Leary; Newcastle/UK

B-0130 10:30

Mammography performance and quality assurance practice among five European countries

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Purpose: The purpose of this study was to identify variability in mammography practice focused on approach to select exposure parameters, breast compression, quality control procedures, image quality assessment and guidelines in use in five European countries.

Methods and Materials: This study was cross sectional survey based on an online questionnaire addressed to clinical radiographers in five European countries. Questions were mostly closed-ended with the possibility to add comments. The answers were dichotomous, multiple choice or with a five point Likert Scale. The data collected was analysed and redundant data was disregarded. Statistical data analysis was performed using the software packages SPSS (version 21, IBM) by using descriptive methods, Chi square and independent samples t-test.

Results: Computed Mammography (CR) was used by 10% of the participant institutions and Full Field Digital Mammography (FFDM) by 89%. Recommendations on exposure parameter selection were based mainly on National (23%), EUREF (9%), ACR (7%), local (5%) and IAEA guidelines (4%). The main techniques selected by radiographers were use of automatic exposure control, molybdenum/rhodium (Mo/Rh) as target/filter combination, compression force from 8 kg to 11 kg and standard mediolateral oblique (MLO) projection angle of 45 degrees. Technical quality control was implemented in 99% of the departments involved in this study.

Conclusion: Practice in mammography varies considering the participant institutions. That reveals the need of further studies to identify if the cause is due to the population characteristics or if it is due to the use of different guidelines.

B-0131 10:38

Validation of applied pressures after clinical introduction of pressure-standardised compression mammography

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Purpose: Validation of the compression pressure of a pressure-standardized compression mammography (PSCM) system, which aims to reduce discomfort and pain by applying the same force per unit of area to every breast, independent of breast size.

Methods and Materials: We retrospectively studied mammograms of 50 patients acquired with the conventional force-standardized compression mammography (FSCM) technique and intra-individually compared them to mammograms acquired on checkup visits with PSCM technique. Patients received one craniocaudal (CC) and one mediolateral oblique (MLO) compression for both breasts. The contact area between breast and compression paddle enabled the calculation of compression pressures.

Results: A total of 193 FSCM and 193 PSCM images were analysed. The mean compression pressure decreased significantly from 16.6 ± 6.8 to 12.8 ± 3.4 kPa, while also drastically reducing the relative standard deviation of the compression pressure with PSCM. The applied compression pressure is depends very slightly on breast contact area; however, this was likely to be clinically irrelevant. Furthermore, the relative number of compressions of more than 20 kPa reduced significantly from 22.8% to 1.6%, benefiting patients with smaller breasts.

Conclusion: The introduction of the PSCM system led to a nearly constant applied compression pressure for different contact areas and a significant reduction in compression pressures. Especially for higher pressures, which are generally applied to smaller breasts and are generally associated with discomfort and pain. This suggests that using PSCM can reduce patient discomfort and pain during mammographic compression and provide a more constant image quality, which could potentially improve diagnostics.

B-0132 10:46

Breast compression between women imaged using digital mammography and breast tomosynthesis in a population-based breast cancer screening programme

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Purpose: Digital breast tomosynthesis (DBT) leads to longer image recording time. We compared breast compression when screening with digital mammography (DM) or DBT.

Methods and Materials: The study included information about 16,832 women participating in the Bergen Tomosynthesis Trial, as a part of BreastScreen Norway, January 2016 to April 2017. We compared mean values of applied compression force (N) and pressure (kPa), for DM and DBT, by view (craniocaudal, CC, and mediolateral-oblique, MLO). Two-sample t tests were used to test statistical significance.

Results: Half the women were screened with DM (n=8354) and the other half with DBT (n=8478). Mean compression force was statistically significantly higher for DM compared to DBT (CC: 108.6N vs 102.7N; MLO: 122.4N vs 120.8N, p<0.01). Mean compression pressure was statistically significantly higher for DM compared to DBT for CC view (13.9kPa vs 13.0kPa, p<0.01). There was no difference in compression pressure between the screening techniques for MLO view (DM and DBT: 9.7kPa, p=0.55).

Conclusion: Radiographers applied less compression when performing screening with DBT compared to DM. However, the observed differences in breast compression between the screening techniques were negligible. Further research is needed to investigate the clinical implications of these findings.

B-0133 10:54

Breast compression and experience of pain: comparing two compression paddles

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Purpose: Women's experience of pain during screening mammography may be related to breast compression and result in non-attendance of the next screening examination. We aimed to compare the pain experienced among women screened using an ordinary flexible paddle and women screened using a fixed paddle, standardizing compression pressure to 10 kilopascal (kPa).

Methods and Materials: Data on experienced pain, compression force (newton, N) and pressure, and related factors (age, breast volume, contact breast area, pain in shoulders and/or neck prior to mammography), were collected via a questionnaire from 1,444 women screened using fixed (n=950) or flexible (n=494) paddle, May-June 2017. Experienced pain was evaluated using a scale from 0 to 10 and presented as no/mild (<3.5) and moderate/severe (≥ 3.5). We used logistic regression to estimate the odds ratio (OR) with 95% confidence interval (95%CI) for moderate/severe pain associated with type of compression paddle, adjusting for compression force or pressure and related factors.

Results: No difference in experienced pain was observed for women screened using the flexible paddle compared to the study paddle (OR 1.15; 95%CI 0.89-1.49 for compression force; and OR 1.25; 95%CI 0.94-1.65 for compression pressure). Pain in shoulders and/or neck prior to mammography coupled with increasing compression force or pressure during mammography was associated with moderate/severe pain during mammography.

Conclusion: The ordinary flexible paddle and the fixed paddle standardizing compression pressure perform similarly with respect to pain experienced during mammography. Future research on comparing the performance of the paddles should explore the association between breast compression and image quality.

B-0134 11:02

The influence of breast compression on re-attendance in a population-based screening programme

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Purpose: A high attendance rate in organized breast cancer screening programs is a prerequisite to achieve a reduction in breast cancer mortality. We aimed to investigate whether breast compression at prior screening was associated with re-attendance among subsequently screened women in BreastScreen Norway.

Methods and Materials: Information about re-attendance were available for 77,674 women aged 52-69 with at least two prior screening exams, 2007-2013. Data on compression force (kg) and pressure (kPa) were available from automated density assessment software. Two-sample unpaired t-tests were used to identify differences in re-attendance. Logistic regression was used to estimate the odds of re-attendance, adjusting for age, county of residence, prior false positive result, breast volume, breast density, and year of screening.