

overall cancer incidence and 4 in the structure of the overall cancer mortality. Since 2008, population BC screening has been introduced among women 50–60 years old with an interval of 2 years. In 2014, 80% of mammography devices were digitized. Since 2018, the screening age has been extended to 40–70 years.

Methodology The following screening indicators were analyzed: the cancer detection rate (CDR), the proportion of 0–1 stages (since 2011), the interrelation with the dynamics of morbidity and mortality. According to the levels of morbidity (average annual rate for 2004–2007), the regions of the country are divided into three groups: A - high (23.2–30.8 per 100 000 population), B - mid (18.4%–22.5%–22.5%–22.5%), and C - low (13, 2–15.18%–22.5%–22.5%) rate.

In total, over 12 years of screening, 5,763,518 women were examined, 9,323 cases of BC were identified. Coverage to the targeted population ranged from 82% in 2012 to 47.5% in 2018. Since 2011, BC screening cases (8 330) have been compared with the cancer registry.

Results Average CDR in 2011–2019 was 0.18%, in groups A - 0.23%, B - 0.20% and C - 0.14%. The share of 0–I stages was 36.2%, in groups A - 39.9%, B - 29.9% and C - 22.1%.

The average annual baseline morbidity (2004–2007) was in groups A - 26.6 per 100 000 population, B - 21.2%–21.2%–21.2%–21.2%, C - 14.3%–21.2%–21.2%–21.2%, before digitalization (2008–2014), the average annual morbidity in groups was: in A - 30.5%–30.5%–30.5%–30.5%, B - 22.8%–22.8%–22.8%–22.8%, C - 16.5%–16.5%–16.5%–16.5%, after digitalization, respectively 31.5, 23.8 and 18.7.

The greatest increase of morbidity was noted in groups A and C (20.6% and 30.7%), less in group B (12.4%). Screening increased the incidence since 20.8%–20.8%–20.8%–20.8% in 2008 till 25.3 in 2018 and slightly reduced the mortality rate from 8.5 (2008) to 6.8 (2018) per 100 thousand of the population.

Conclusion Over the 12 years of screening in Kazakhstan, the BC incidence has increased and mortality has decreased. Regions with a high baseline morbidity had higher CDRs by screening, especially in the first years, as well as high levels of BC detection in stage 0–I. It is possible that radiologists have better skills and women's cancer awareness is higher in regions with a high cancer incidence.

For regions with different BC incidence rates, it is necessary to identify indicators to assess of the effectiveness and improve the quality of screening.

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551 A RETROSPECTIVE STUDY OF STERNAL METASTASES IN BREAST CANCER

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Introduction/Background Sternal metastases of breast cancer are rare. Their occurrence is due to the spread of malignant cells via the hematogenous route or via a local pathway from the internal mammary nodes.

The aim of this study is to define the different pattern of sternal malignant abnormalities on bone scan.

Methodology It is a retrospective study including breast cancer patients, referred for bone scan during 2019, at the Nuclear Medicine department of Tlemcen University Hospital in Algeria.

Two hours after the intravenous injection of 8–10 MBq/kg ^{99m}Tc-HMDP, whole body scanning is accomplished by dual head hybrid gamma camera with low energy high resolution collimator. The SPECT/CT (single photon emission tomography/computed tomography) acquisition is used to better characterize the presence, location, and extent of disease in some patients.

Results A total of 54 malignant sternal abnormalities were found in 500 breast cancer patients (10,8%).

Half of the lesions (27 cases) were located in the sternal body, 17 (32%) in the manubrium and 10 (18%) in the entire bone structure.

The majority of sternal abnormalities (47 cases; 87%) was found as a part of multiple metastases, while only 2 cases (4%) as a part of oligometastases and 5 cases (9%) as the initial site of bone metastases.

A solitary sternal uptake on bone scan is difficult to interpret due to various etiologies, both benign and malignant. The SPECT/CT acquisition has allowed us to define the secondary origin of the radioactivity uptake after cross sectional study and confrontation with morphological imaging.

The predominant scintigraphic pattern was that of hot lesions (48 cases; 89%), which highlights an osteoblastic hyperactivity. A cold lesion representing an osteoclastic activity, is rarely seen in bone scan until it is surrounded by an increased radioactivity uptake. The latter aspect was found in 6 patients (11%).

Conclusion Radionuclide bone scintigraphy is a useful tool for recognizing sternal abnormalities in breast cancer patients.

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556 AXILLARY LYMPHADENECTOMY VS. SENTINEL NODE BIOPSY FOR EARLY-STAGE CLINICALLY NODE-NEGATIVE BREAST CANCER: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction/Background Axillary lymph node dissection had been for years the gold standard for surgical staging and locoregional control of axilla in early-stage breast cancer patients. However, sentinel node biopsy has been placed in early 1990s as an effective alternative method of surgical staging. Main objective of the study is to compare oncological and survival outcomes between systematic axillary lymph node dissection (ALND) vs sentinel lymph node and axillary lymphadenectomy only if sentinel positive (SLN ± ALND) in early-stage, clinically node-negative breast cancer patients.

Methodology A systematic review and meta-analysis adhered to PRISMA guidelines was performed. Included studies were prospective randomized controlled trials (RCTs) comparing survival outcomes of ALND vs. SLN ± ALND in early-stage, node-negative breast cancer patients. Patients enrolled were only those with tumor size lower than 4 cm, clinically negative nodes and treated with breast-conservative surgery. Primary outcomes were locoregional recurrence, overall death and cancer-related death.

Results There were four studies included in the analysis, enrolling overall 2,982 patients, of which 1,494 in ALND arm and 1,488 in the SLN ± ALND arm. No statistically significant difference was observed in locoregional recurrence, breast cancer-related death and overall death. Locoregional recurrence was observed in 2.8% (ALND) vs. 4.1% (SLND ± ALND), (RR: 0.69, 95% CI: 0.20–2.30). Overall death rate was 7.0% vs. 6.8% respectively, (RR:1.00, 95% CI: 0.73–1.39, I²=28.7%). Breast cancer-related death was 3.6% vs.3.5% respectively (SLN ± ALND), (RR: 1.11, 95% CI: 0.70–1.78, I²=0%). No statistically significant difference was observed in any of secondary study outcomes.

Conclusion Systematic axillary lymphadenectomy provides no survival and oncological benefit compared with sentinel lymph node dissection for early-stage clinically node-negative breast cancer patients.

Disclosures Authors report no conflict of interest.

Cervical cancer

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TRAINING PARAMEDICAL STAFF TO PERFORM CERVICAL CANCER SCREENING WITH AID OF SPECIALLY DESIGNED VIDEO BASED TUTORIALS AND COMPARATIVE EVALUATION OF HPV VERSUS CYTOLOGY AS TRIAGE TEST AMONG VIA POSITIVE WOMEN

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Introduction/Background Visual Inspection after application of 5% acetic acid (VIA) has been recommended for primary cervical cancer screening in India. The objectives were to develop and validate video based training tool for capacity building of paramedical staff in cancer awareness and screening, thereby reducing expert time requirement and duration of training and to comparatively evaluate performance of HPV Hybrid Capture 2 (HC2) and Cytology as triage tests among VIA screen positive women, thus aiming to reduce referral burden. **Methodology** Video based tutorials were prepared in 14 modules. These videos included conducting cancer awareness, performing VIA, collecting samples for HPV and Cytology. The paramedical staff were invited for training. The standard training of 12 weeks was reduced to two weeks using new tool. Practical demonstration and micro-teaching was combined with tutorials training on pre-loaded tablets.

Community based cervical cancer screening with VIA was conducted among women aged 30–65, residing in Mumbai, India, by trained Primary Health Workers (PHWs). After obtaining informed consent, delivering cancer awareness, participants were offered VIA screening by trained PHWs. All VIA screen positive women underwent Cytology and HPV HC2 and later diagnostic Colposcopy at nodal hospital. Women with positive Colposcopy underwent cervical biopsies.

Results Fifty trainees were evaluated with theory and practical evaluation. All trainees found training to be informative, easy to understand and felt confident to deliver cancer awareness, perform VIA and collect samples for HPV and Cytology.

231 VIA positive women underwent Cytology and HPV HC2 test, followed by Colposcopy. Cervical biopsies were

obtained in 83 cases. The sensitivity and specificity in detecting ≥ CIN 2 were 77.8 and 92.3 for HC2 and 66.7 and 98.2 for cytology. The false positivity and negativity rates were 7.7 and 22.2 for HC2 and 1.8 and 33.3 for cytology.

Conclusion With India now being on roll out mode of cancer control programme, it's outcome will depend on quality of training that will be imparted to health services staff. The preparation and validation of these indigenously prepared video based tutorials has opened new avenue by which vast majority of paramedical staff could be trained in relatively shorter duration and utilizing least expert time.

The study shows that paramedical staff can be trained to collect HPV samples and that HPV HC2 reduces referrals to larger extent and misses fewer cases compared to cytology, thus appearing a better triage test among VIA positive women.

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LESSONS FROM RADIOCHEMOTHERAPY AND MODERN IMAGE-GUIDED ADAPTIVE BRACHYTHERAPY FOLLOWED BY HYSTERECTOMY

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Introduction/Background To analyze the clinical outcomes and the safety of radiochemotherapy (RCT) and image-guided adaptive brachytherapy (IGABT) and to evaluate the impact of hysterectomy (HT) as completion of treatment for cervical cancer.

Methodology 145 patients with locally advanced cervical cancer were treated at our institution. Patients underwent RCT and IGABT, then hysterectomy (HT) as completion of treatment was performed, with the exception of patients with surgical contraindications, para aortic metastatic disease or patients who refused surgery. Clinical outcomes and morbidity were retrospectively reviewed in both groups. Local relapse free survival (LRFS), pelvic relapse free survival (PRFS) and overall survival (OS) were analysed.

Results Completion HT was performed in 90 (62.1%) patients. Complete histological response and microscopic disease were found in 77 patients (85.6%). Local relapse was observed in 14 patients (9.6%) without differences between completion HT group and the definitive RCT and IGABT group (Odds Ratio OR=1.73 [0.57–5.23], p=0.33). The estimated 3-year LRFS and PRFS for the entire population were respectively 90% [84%-94%] and 93% [87%-96%], with no significant differences between them (respectively Hazard Ratio HR=0.57 [0.20–1.64], p=0.30 and HR=0.37 [0.10–1.31], p=0.12). The estimated 3-year OS rate for the whole population was 84% [75%-91%] with no significant differences between groups (HR=0.81 [0.32–2.06], p=0.65). Regarding morbidity, grade ≥2 vaginal toxicity was more frequent in the definitive RCT and IGABT group (43.6% vs 26.7%, p=0.04). All grade 4 toxicity events were reported in the completion HT group.

Conclusion Due to high severe toxicity, RCT and IGABT with dose escalation followed by completion hysterectomy don't seem compatible. No benefit and increased severe late morbidity were observed. Combined intracavitary/interstitial technique is mandatory in large target volume at brachytherapy.

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