Background: We used 3-deoxy-3-^{18}F-fluorothymidine (FLT) PET-CT to delineate biological tumour volume in thoracic oesophageal carcinoma, for a treatment planning simulation. We compared results with that of ^{18}F-fluorodeoxyglucose (FDG) PET-CT, on the basis of dosimetric analysis.

Methods: 22 patients with oesophageal squamous-cell carcinoma detected by FLT and FDG PET-CT were enrolled. We used the treatment planning system to compare hypothetical treatment plans based on the optimal threshold for standard uptake value of FLT and FDG PET-CT. We compared parameters in dose–volume histograms of the two groups, planning fields in similar directions and ensuring the prescribed dose line surrounded 95% of the target volume.

Findings: Gross tumour volume, clinical target volume, and planning target volume were less with FLT than with FDG PET-CT imaging. The conformity index and homogeneity index did not differ significantly between FLT and FDG PET-CT treatment planning. The difference in V_{20} of bilateral lung, V_{40} of heart, and maximum dose received by the spinal cord did not differ significantly between FLT and FDG. Values for mean lung dose, V_5, V_{10}, V_{30}, V_{40}, and V_{50} of bilateral lung, and mean heart dose and V_{30} of heart were significantly lower with FLT PET-CT based planning than with FDG PET-CT (t = -5.442 to −2.637, $p < 0.05$).

Interpretation: Treatment planning based on FLT PET-CT had potential benefits for some organs at risk, such as lungs and heart.

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P55 THORACO-ABDOMINAL FLAP COVER FOR LARGE POST-MASTECTOMY DEFECTS – EXPERIENCE FROM A REGIONAL CANCER CENTRE IN NORTHEAST INDIA

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Background: Tumours of the breast have become one of the most common malignancies in India in recent years, and seem to be increasing. Common malignancies affecting the breast are carcinoma and sarcoma, including phyllodes tumour. Because of a lack of awareness in the general population, patients present late and with large advanced tumours. Surgery for large tumours leads to extensive defects that may not be suitable for primary closure. Extensive, complex surgical procedures are not suitable for our centre because of a lack of resources and time constraints. We share our experience of closure of such defects using a simple procedure, the thoraco-abdominal (TA) flap.

Methods: Between January, 2003, and December, 2010, a total of 1232 patients had surgery for breast tumours at our centre. Of these, 912 (74%) of patients had a mastectomy. 78 (8.5%) of patients had a large post-mastectomy defect that could not be closed primarily. Soft-tissue cover using the TA flap was done for all of these patients. The TA flap is a rotation-advancement variant of the fascio-cutaneous flap, with random pattern blood supply.

Findings: Primary healing could be achieved in 73 (94%) of patients who had TA flap cover. Three patients had marginal necrosis that responded to conservative treatment. Two patients developed major necrosis with loss of TA flap and needed salvage myocutaneous flap repair. All patients were able to receive the planned adjuvant chemo and/or radiation therapy.

Interpretation: The aim of surgery in large advanced breast tumours is adequate disease extirpation with early recovery, so that adjuvant therapy can be done to improve survival. The TA flap is a simple, safe, reliable, and effective technique with minimum morbidity for coverage of large post-mastectomy defects, and is particularly suited for surgeons and patients in our region.

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P56 EFFECTS OF HYPOXIA ON ANGIOGENESIS AND PROLIFERATION – CORRELATION WITH TUMOUR RESPONSE IN PATIENTS WITH CERVICAL CANCER TREATED WITH COMBINED RADIATION AND CARBOGEN–NICOTINAMIDE

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Background: Hypoxia has been shown to cause tumour resistance to radiation and chemotherapy. Treatment failure in large tumours of locally advanced cervical cancer is associated with intratumoral hypoxic circumstances. We investigated the association between hypoxia, angiogenesis, proliferation, and tumour volume in patients with locally advanced cervical cancer, and evaluated the effectiveness of carbogen-nicotinamide (CON) as a hypoxia modifier to enhance cell oxygenation.

Methods: 89 patients with locally advanced cervical cancer treated at the Department of Radiotherapy, Cipto Mangunkusumo General Hospital, Jakarta, were included in this study. Patients were divided into two groups. Group 1 consisted of 29 patients who received radiotherapy combined with CON (RT + CON); group 2 had 60 patients who received chemo-radiotherapy (CRT) with cis-platinum. Group 2 was randomly divided into two subgroups, who received CRT plus CON or CRT alone. Biopsy specimens were taken to identify CA9 as a hypoxia marker, vascular endothelial growth factor (VEGF) as an angiogenesis marker, and S-phase fraction (SPF) as a proliferation marker. Analysis was done to evaluate the correlation between the three markers, between the markers and tumour volume, and the benefit of introducing CON.

Findings: A significant positive correlation was noted among pre-irradiated tumour volume and two markers: CA9 ($r = 0.514$, $p = 0.007$) and SPF ($r = 0.422$, $p = 0.032$), but there was a weak and non-significant correlation between tumour volume and VEGF ($r = 0.422$, $p = 0.114$). Significant correlations among the markers were also found: CA9 with VEGF ($r = 0.678$, $p = 0.000$), VEGF with SPF ($r = 0.475$, $p = 0.005$), and SPF with CA9 ($r = 0.510$, $p = 0.002$). CON effectiveness was analysed by evaluating treatment

response. 69.2% in the RT + CON group had a complete response. 90.9% of the CRT + CON group and 63.6% of the CRT group had a complete response (statistically significant at $p = 0.031$). No significant correlation was found between RT + CON and CRT ($p = 0.313$).

Interpretation: This study shows that hypoxia and cell proliferation increase with tumour volume. The response to radiation increased significantly in the group who received CON as part of treatment. This finding shows that CON has an important role in breaking the cycle that causes radio-chemoresistance. Therefore, CON in combination with RT can be considered for those who are not eligible for or refuse chemotherapy.

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P58 EXPRESSION OF NISCHARIN IN HUMAN BREAST-CANCER TISSUE

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Background: Nischarin, a novel protein, was originally identified as an α5β1 interacting protein and has been shown to inhibit cell motility through inhibition of the Rac/PAK/LIMK/Coffinin pathway. Nischarin blocks tumour-cell migration and invasion in breast-cancer cell line MCF7.

Methods: To further study the role of Nischarin in breast cancer, we evaluated expression levels by immunohistochemistry in 36 breast-cancer and 20 normal-breast tissue sections. We also looked at the expression pattern using the NCBI-GEO database.

Findings: Nischarin expression was positive in 27.8% (10/36) breast-cancer tissues, which was significantly lower than the percent expressing the protein in normal breast tissues (55%, 11/20; $p < 0.05$). Furthermore, expression of Nischarin in breast cancer was associated with oestrogen-receptor (ER) status. Nischarin was expressed in 60% (6/10) ER-positive tumour tissues, whereas in ER-negative tumour tissues, positivity of Nischarin was only 15.4% (4/26; $p < 0.05$). Concordant with immunostaining, NCBI-GEO analysis confirmed that Nischarin was poorly expressed in HER2-positive and/or ER-negative highly invasive breast cancer, and was expressed at higher levels in other cancerous cells and in normal breast tissue.

Interpretation: These data suggest that Nischarin has an important role in breast-cancer progression, and it might be a potential tumour suppressor. The relationship between Nischarin and breast cancer, and the mechanism, are currently being studied.

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