

24×1.2 mm, pitch 0.1, rotation 1s, slice 1.5 mm, increment 0.8 mm, temporal resolution 0.5 s), 1.5T MRI (coronal dynamic 3d-flash; TREAT with TR/TE 2.13/0.72 ms, voxel size 2.7×2.7×4.0 mm, t-res. 1.4 s) and linac-integrated CBCT (720 projections, 3 min. rotation, t-res. ~1 s). Static CT without respiration served as control. 3 observers recorded lesion size (RECIST x/y/z-diameters) and axial displacement using standard viewing software. Interobserver- and interphase-variation coefficients (VC for different respiratory phases) indicated the reproducibility of measurements. **Results:** Mean lesion sizes on static and dynamic CT were equal (x: 1.88 vs. 1.87 cm; y: 1.30 vs. 1.39 cm; z: 1.71 vs. 1.73 cm; all  $p > 0.05$ ), but appeared larger on MRI and CBCT (x: 2.06/1.95 cm [ $p < 0.05$  vs. CT]; y: 1.47/1.28 cm [MRI vs. CT/CBCT  $p < 0.05$ ; CT vs. CBCT  $p = 0.89$ ]; z: 1.86/1.83 cm [CT vs. CBCT  $p < 0.05$ , other  $p > 0.05$ ]). The interobserver-VC for lesion sizes were 2.54–4.47% (static CT), 2.29–4.48% (4D-CT); 5.44–6.22% (MRI) and 4.86–6.97% (CBCT). Interphase-VC for lesion sizes were 2.28–3.54% (4D-CT), 6.56–8.36% (MRI) and 7.30–10.0% (CBCT). Mean axial displacement decreased from static CT (1.65 cm; VC = 2.77%) over 4D-CT (1.40 cm; VC = 2.9%) and CBCT (1.23 cm; VC = 5.9%) to MRI (1.16 cm; VC = 12.3%).

**Conclusions:** As a consequence of lower spatial and temporal resolution, 4D-MRI and CBCT slightly overestimate lesion size and underestimate displacement with a lower reproducibility of measurements compared to 4D-CT. All modalities are suitable to measure size and displacement of target lesions. Prior to a clinical application, the technical limitations were anticipated in this ex-vivo study.

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POSTER

#### Screening of malignant tumours – importance of fibrinogen serum levels by comparison with other biological parameters

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**Background:** The named Constitutional Syndrome (asthenia, anorexia, weight loss, fever, etc), with any fact to be localized, is frequently observed and to know its nature (infectious, inflammatory, tumoral etiology) is urgent. To have biological parameters of easy and fast evaluation, reliable and low cost is often profitable.

The aim of this study was to prove the utility of fibrinogen serum levels for screening of malignant tumors and to compare that with others biological parameters.

**Patients and Methods:** We have studied 472 tumoral patients. They were distributed in 10 subgroups according to localization. Age: 13–92 years old. Gender: 70% males. Extension: 62% of them with any metastasis. In all patients the following biological parameters were evaluated in serum: fibrinogen, platelets, haemoglobin, E.S.R., albumin,  $\alpha_2$  globulin,  $\alpha_1$  antitrypsin, acid and alkaline phosphatases, LDH,  $\gamma$ -GT, a-fetoprotein and CEA. The results were compared with healthy and pathological (no tumoral populations). Statistical analysis included probability, sensibility and specificity.

**Results:** Fibrinogen was elevated in 44% of tumoral patients, with statistical difference in comparison with healthy and no tumoral populations ( $p < 0.001$  both subgroups); that increase was also significant in 9 of 10 tumoral subgroups. Sensivity of fibrinogen to detect malignant tumors was 68% and specificity 80%. Not other biological parameter clustered so much statistical facts in favour of malignant tumor.

#### Conclusions:

1. Fibrinogen is a biological parameter of easy, fast and economical measurement.
2. It is increased in a wide tumoral population, even in absence of metastasis.
3. Its utility to diagnosis is reinforced when it is associated to other altered biological parameters.

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POSTER

#### CT study on eye lens protection during whole-brain radiation by change of the line of sight

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**Background:** The seamless registration of the subfrontal region and protection of the eye lenses is a notorious problem in whole-brain radiation. Objective of this investigation is whether a change of the line of sight by looking up, down, or straight ahead leads to a greater distance between the subfrontal brain (cribriforme plate) and lenses. Therefore potentially an improved dose distribution of the subfrontal region with uppermost protection of the eye lenses can be achieved.

**Methods:** 12 patients with an indication for whole-brain radiation were studied. During the planning CT scan (slice thickness 3 mm) they were instructed to look up, down and straight ahead. Three consecutive CT scans

were performed. The distance between the eye lenses and cribriforme plate was measured for each CT scan.

**Results:** The distance between the lenses and the cribriforme plate was significantly increased by 6–9 mm when patients were looking down. Looking up (1–3 mm) and looking straight ahead (4–5 mm) were associated with an intermediate distance to the irradiated area.

**Conclusion:** Instructing the patient to look down results in a significantly improved distance between the lens and the cribriforme plate. With this simple method a better coverage of the brain can be achieved with protection of the eye lenses.

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POSTER

#### The diagnostic value of FDG-PET in soft tissue and Ewing's sarcoma

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Soft tissue sarcoma and Ewing's sarcoma comprise a group of relatively rare tumors in which the conventional diagnostic techniques often yield unspecific and doubtful findings.

**Purpose:** The aim of this study was to compare the value of FDG-PET and CIM (conventional imaging modalities: CT, MRI) in patients with Ewing's sarcoma and soft tissue sarcoma.

**Patients and Methods:** The consecutively admitted patients with histologically proven Ewing's sarcoma (5 pts.) and soft tissue sarcoma (13 pts.) were examined by FDG-PET for postoperative residual disease, recurrency detection and therapeutic response assessment. The soft tissue sarcoma group consisted of 3 fibrosarcomas, 3 liposarcomas, 1 synovial sarcoma, 2 malignant Schwannomas, 1 pleomorphic liposarcoma and 3 leiomyosarcomas.

CIM and FDG-PET were performed within 2 month interval and the findings were compared. Histology and clinical/imaging follow-up served as gold standard.

**Results:** The tumors were mostly localised in thorax region (8/18) and retroperitoneum (7/18). The sensitivity, specificity, positive predictive value and negative predictive value for CIM were as follows: 55.56%, 33.33%, 45.45% and 42.86% and for FDG PET: 77.78%, 88.89%, 87.50% and 80.0%. CT findings were false positive in 4/7 pts. and false negative in 2 pts. in retroperitoneal localisation. In the same region there were no false positive or false negative FDG PET findings. In the thorax CT finding was false positive and false negative in 2/8 pts., respectively. For the same localisation FDG PET was false negative in 2/8 pts., without any false positive finding. The only one false positive FDG PET finding was located in the lower extremity.

**Conclusion:** Our series demonstrated better sensitivity and specificity of FDG PET in comparison with CIM in recurrency or residual disease detection, especially in the retroperitoneal soft tissue sarcoma.

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POSTER

#### Action Cancer: digital mammography with satellite transmission on a mobile unit

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**Background:** Action Cancer, a charitable organisation in Northern Ireland, provides free, high quality breast cancer screening services to women who fall outside eligibility for the National Health Service Breast Screening Program (NHSBSP), specifically those aged 40–49 years and >65 yrs. With reports that digital mammography better visualises dense breast tissue prevalent in younger women, without reduced image quality for older women, Action Cancer chose to utilise a digital mammography system. The purpose of this paper is to describe the unique system in place, which utilises satellite transmission for the mobile unit.

**Material and Methods:** Working closely with Siemens Medical Solutions and utilising the 'Mammomat Novation' system Action Cancer installed the digital screening technology in the main clinic and on their mobile services unit (The Big Bus). The Big Bus, a £1.5 million partnership project between the organisation and the private sector, is an 18 metre-long unit, housing screening, health check and therapeutic services, the only one of its kind in Europe.

**Results:** Since September 2006 Action Cancer successfully implemented the only digital screening system in Northern Ireland, both in their main clinic and on their Big Bus. Following Quality Assurance (QA) standards, at Action Cancer House (ACH) the image is taken on the SIEMENS Novation DR and is then sent to mammoreport station and archive. For the Big Bus, however, once the image is taken on the SIEMENS Novation DR, it is then sent to sienet sky system where prototype compression technology