

## Absorbed dose calculations from interstitial $^{32}\text{P}$ therapy using SPECT

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$^{32}\text{P}$  in the form of chromic phosphate has long been used through the intracavitary applications in patient with malignant ascites, malignant pleural effusion and superficial bladder cancer. Recently, it is also used in the treatment of solid tumors such as pancreatic cancer thru the interstitial administration.

The objective of this study was to perform bremsstrahlung single photon emission computed tomographic(SPECT) imaging using  $^{32}\text{P}$  for volume and activity measurement in an attempt to estimate the absorbed tumor dose.

Two patients with pancreatic cancer were injected with 555MBq of  $^{32}\text{P}$  chromic phosphate into the tumor via interstitial route under the ultrasound(US) guidance. Serial SPECT images were obtained in these patients. The patient's body contour was defined by the use of two external  $^{99\text{m}}\text{Tc}$  sources on the collimator. For SPECT acquisition, 64 projections over 360 degrees for 20sec per projection in a 64x64 matrix using an energy window setting of 100keV  $\pm$  25% were obtained.

The mean tumor dose within the pancreas was then calculated according to the medical internal radiation dose(MIRD) schema. The tumor volumes of the two patients calculated using the reconstructed SPECT slices were 64 and 69 ccs respectively. The absorbed dose estimates for these patients were 1646 and 1527 Gy.

In conclusion, absorbed tumor dose calculation from the interstitial  $^{32}\text{P}$  therapy for solid tumor is feasible by performing bremsstrahlung SPECT.