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# Experimental study of the possibility of 3D localization of the compact gamma sources in soft tissues

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To determine the depth of the area of radiopharmaceutical accumulation a method of simultaneous recording of two lines of gamma rays of different energies and quantitative comparison of the intensity of these lines on the surface of the patient's body is provided. Since the coefficient of linear absorption of gamma radiation in the medium depends not only on the characteristics of the medium, but also on the gamma radiation energy, the intensity of gammas of different energies is attenuated differently after passing through the same absorber layer (soft tissues). Thus, the quantitative comparison of the relative intensities of gamma lines on the surface of the patient's body allows to determine the depth of area of the accumulation of the radiopharmaceutical. The result is achieved by analyzing the energy spectrum of the source, obtained with a scintillation detector or a semiconductor spectrometer, by the quantitative analysis of the absorption peaks of the radioisotope. The most widely used medical radioisotope technetium-99m has two gamma-lines - 140 keV and 18 keV, which allows one to apply the proposed method to search for the sentinel lymph nodes and non-palpable malignant tumors in the soft tissues.

## Presentation type

Section talk (10+5 min)

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