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Imaging of metastatic melanoma utilising a technetium-99m labelled RGD-containing synthetic peptide.

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Source

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Abstract

Integrins are cell-surface glycoproteins found in different forms on all cells except erythrocytes. Integrins bind to cell adhesion molecules and to proteins found in the extracellular matrix. A tripeptidic sequence Arg-Gly-Asp (RGD) is often the primary site of recognition by integrins which are expressed on tumour cells and are responsible for tumour invasion and metastasis. A synthetic decapeptide designated alpha P2 containing two RGD sequences radiolabelled with technetium-99m was used to image malignant melanoma in vivo. Fourteen patients previously diagnosed with metastatic melanoma underwent gamma camera imaging 20-180 min following intravenous administration of the radiolabelled synthetic decapeptide alpha P2. Six out of eight (6/8) of the lymph node metastases (75%) and all other neoplastic sites (11 sites) were successfully imaged, with the exception of three sites in the mediastinal area which were not positively imaged. In two cases there was false positive uptake in the rounded pigmented areolar/nipple area. In three cases (seven sites) the peptide scan confirmed the absence of disease in suspected lesions (true-negative). The synthetic peptide was rapidly removed from the circulation by filtration through the kidneys and excretion in the urine. No toxicity or adverse events were recorded. Radiolabelled alpha P2 peptide, which binds specifically to adhesion molecules on tumours, can be used for the in vivo detection of neoplastic metastases.