ONCO - SCINT CR 103 IN MANAGMENT OF COLORECTAL CANCER . UTILITY IN FOLLOW-UP AND IN PRESURGICAL PLANNING .

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Radiolabelled monoclonal antibodies are a useful diagnostic method in identifying neoplastic lesions. B 72.3 is a murine Ig-G which recognizes a plasma membrane mucin-like structure , known as tumor associated glycoprotein (TAG 72), expressed in several neoplasms . TAG 72 can be visualized with planar immunoscintigraphy, labelling B 72.3 with gamma-emitting radionuclides (Onco-Scint CR 103). In this way, from January '92 to June '93 we evaluated 12 pts in follow-up for resected colorectal cancer and 32 pts involved in presurgical definition. Pts ranged between 48 and 78 ys old. Each pt underwent complete blood chemistry including tumor markers, abdominal US and CT-scan. MRI and hystological confirmation needed in 6 pts. Planar scintigraphy imaging was assessed at 24, 48 and 72 hours after IV injection of CR 103 (1 mg).

We obtained :

- a positive result in pts with mere elevation of CEA and / or CA 19.9 (3/4 in follow-up group) .
- a positive result in pts with undetected metastasis at conventional radiological method, in particular those with bone and soft tissue (especially in abdominal wall) recurrencies (4/7 in follow-up group and 10/32 in presurgical group) .
- a further surgical approach in pts with single metastatic lesions .
- a 5 % mild adverse effects (fever, abdominal pain) .
- an only allergic reaction requiring steroid therapy .

In our experience Onco-Scint CR 103 may be a new diagnostic tool to detect tumoral relapses in case of negative conventional radiological techniques. Onco-Scint is an impressive aid in surgical managment of a single metastatic lesion.

99mTc-HMPAO SPECT FINDINGS IN BRAIN TUMORS: OUR EXPERIENCE.

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The usefulness of regional cerebral blood flow (rCBF) imaging as an aid in the diagnosis of various neurological disorders has been demonstrated, but as yet its role in the study of brain tumors is uncertain. 99mTc-HMPAO is a lipophilic complex which crosses the blood brain barrier and is fixed in brain tissue proportional to cerebral blood flow. We studied the uptake and distribution of this agent in patients with brain tumors. To date sixteen patients with low grade cerebral glioma have been stidied; two of these patients were submitted to radiotherapy. Each patient underwent HMPAO SPECT and CT scan. All pts were injected with 740 MBq 99mTc-HMPAO, and SPECT registration was started about 10 minutes later, using a conventional rotating gammacamera equipped with a low-energy general purpose collimator. We evaluated tumor/nontumor ratio in the tumor area and the normal one, in the slice where the largest tumor extent was evident, according to the CT images. This technique showed a decreased uptake of radiopharmaceutical compared to the normal brain. In one patient the SPECT study showed an interesting additional finding: an apparent increased uptake in the opposite cerebrum of those affected by tumor. This finding has been described in the literature as reactive hyperaemia or luxuriant flow and its meaning remain still uncertain. In the patients submitted to external radiant therapy, there was no uptake in the area corresponding to the tumor as radionecrosis occurred; on the contrary, in case of tumor recurrence, the radioisotope uptake, even if lower than normal brain tissue, is never absent. We can conclude that in brain tumors cerebral HMPAO distribution is comparable with rCBF pattern but it is not chraracteristic, and then is very difficult to get reliable information about histological types of tumors However, space occupying lesions often cause significant disruption of the normal distribution of rCBF and this precedes the development of significant cerebral oedema. Threfore it is well demonstrated by SPECT study the oedematous component of a brain noplasm before CT or NMR.

Furthermore, HMPAO SPECT proves to be useful in depicting tumor blood flow and monitoring pts submitted to radiotherapy ; in this case it is difficult to make by CT differential diagnosis between radionecrosis and tumor recurrence.

SOMATOSTATIN RECEPTOR IMAGING IN BRAIN TUMORS

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Somatostatin (SS) receptors have been identified in a wide variety of primary brain tumors and their metastasis by in vitro tecniques. In this study 40 patients with various intracranial tumors were investigated by planar images obtained 2 and 24 hours after i.v. administration of 185 MBq of 111-In-octreotide (Octreoscan, Byk Gulden). No short time side effects were observed after radiopharmaceutical administration. The results are reported in the table.

ONCOTYPE	scan +	scan -
- meningioma	15/15	
- oligodendroglioma	2/2	
- pituitary adenoma	5/7	2/7
- craniopharyngioma		2/2
- neurinoma		6/6
- low grade astrocytoma	4/4	
- glioblastoma		4/4

Conclusions: 111-In-octreotide is a suitable radiopharmaceutical to visualize SS receptors in brain tumors; further studies are necessary to identify a workable kinetic model accounting for receptor density and affinity; in vivo characterization of SS receptorial tumoral pattern has diagnostic and possibly therapeutic implications.

SOMATOSTATIN RECEPTORS IMAGING IN SMALL CELL LUNG CANCER

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It has recently been shown that somatostatin (SS) receptors are surface markers for various types of tumors. These tumors include those with APUD characteristics as well as several differentiated brain tumors, some breast and lung tumors. SS receptors have been also described on biopsies from small cell lung cancer (SCLC) and on cultured human SCLC, both in vitro and on tumors grown in athimic nude mice. Recent studies found an inverse correlation between presence or SS receptors and EGF receptors and several lines of evidence point to an inverse correlation between differentiation grade and presence of SS receptors.

Planar scintigraphy has been performed in 20 patients with histologically proved SCLC at 4 and 24 hours after i.v. injection of 185 MBq of 111-In-octreotide (Octreoscan, Byk-Gulden, Milano). No short term adverse effects were recorded.

Tumor uptake of radiopharmaceutical was observed in 16 patients at 4 hrs. and in 15 patients at 24 hrs. Scintigraphy showed a more extensive disease than expected by CT studies: T lymphocyte recruitment might play a role but conclusive explanations for this finding are not available.

111-In-octreotide is a suitable radiopharmaceutical for in vivo evaluation of SS receptor status of SCLC. Quantitative scintigraphic methods are need to investigate non specific binding and receptors kinetics. The clinical role of 111-In-octreotide scintigraphy for prognostic stratification and for selection of SCLC subgroups of patients likely to benefit from SS therapy has to be further investigated by longitudinal studies which are in progress at our Institution.