Positron Emission tomography (PET) techniques allow the in vivo imaging of specific molecular event using selected radioligands. It is based on the use of positron emitters labelled radiopharmaceuticals and on dedicated tomographs able to reveal coincidence events. The high sensitivity of PET permits to visualize molecular targets expressed in pM range (like receptors) injecting radiopharmaceuticals in tracer doses, i.e., doses unable to determine any biological modification into the system in which they are introduced (tracer doses or micro doses). This property, simplifies radiopharmaceutical development reducing of toxicological validation, but most of all represent the basis of the high toxicological safety of PET procedures.

A number of radiopharmaceuticas for the in vivo imaging of different biological targets like receptors, enzymes, gene transcription etc., have been developed and applied to different pathological issue. In the last 10 years the results obtained from the use of 2-[18F]fluorodeoxyglucose in clinical practice has made this methodology of first choice in tumour staging, restaging and therapy monitoring. Consequently, particularly when associated to CT systems that over come its limited anatomical content, PET represents a potent tool in diagnostic oncology. The recent development of small animal dedicated tomograph has extended the use of PET to preclinical researches. The possibility to translate the same method from clinic to preclinical activities permits to: develop new diagnostic procedure of possible relevance for patients, monitor in vivo tumour comparison and progression in animal models of neoplasia and compare mice biological phenotype with these characterizing patients lesions. As for biochemical targets present in tumour, the recent efforts in radiopharmaceutical researches have provided a series of tracer that allows the in vivo imaging of the different biochemical pathway characterizing neoplastic tissues like: metabolis pathways activation, cell proliferation, regional hypoxia, blood supply, receptors expression. A number of tracer like [18F]FDG, [11C]Choline, [11C]methyonine, [18F]FLT, [18F]DOPA have been extensively validated and some of them are already in clinical practice. Other like tracers for the in vivo measurementt of hypoxia, angiogenesis, apoptosis or growth factor expression are still in clinical or preclinical development. During the presentation will be presented state of the art and perspective data on the use of PET molecular imaging in oncology and in particular in the identification validation and monitoring of target therapy.

E-mail address: moreesco.rosamaria@hsr.it

Key words: Adrenal Mass, Incidentaloma, Laparoscopic Adrenalectomy

In the last 20 years, wider application and technical improvement of abdominal imaging procedures resulted in an increasing findings of incidentally detected adrenal masses. As a consequence, adrenal incidentalomas have become a common clinical problem. The current prevalence of unsuspected adrenal masses is approximately 1% to 5%.

The differential diagnosis of an adrenal mass may be difficult, with common causes including primary adrenal tumors (benign or malignant, hormonally active or inactive), metastatic tumors, infections, hemorrhage and compensatory hypertrophy. The differentiation between malignant and benign masses is the first critical issue. The other major point to address is whether these tumors, which are usually asymptomatic, are indeed secretory and may cause subclinical forms of Cushing’s syndrome, catecholamine excess, hyperaldosteronism or hyperandrogenism.

We reviewed the 232 adrenalectomies performed at our Institute form 1991 to 2007 and compared the different adrenal masses as far as size of the lesion, operating time, blood loss and length hospital stay are concerned. There were 80 Conn’s disease, 71 pheochromocytomas, 28 Cushing’s syndrome and 53 incidentalomas. These latter at histopathological examination resulted in 36 adrenomas, 4 adenocortical carcinomas, 6 myelolipomas, 6 metastases and 1 nodular hyperplasia.

No significant statistical differences were observed from the analysis of the above parameters but adrenalectomy in patients with Cushing’s disease and with incidentaloma were more challenging. In particular, the mean operating time of incidentalomas was longer than pheochromocytomas and aldosteronomas (100.9 min vs 90.3 min and 94.1 min respectively). The average intraoperative blood loss resulted higher for incidentalomas than aldosteronomas and pheochromocytomas (199.7 ml vs 119.5 ml and 136.4 ml respectively).

It is still controversial about the precise size at which adrenalectomy for incidentaloma is indicated, most Authors recommending surgery for lesions larger than 4 cm, while others when tumors is more than 6 cm.

According to our experience, adrenalectomy for incidentaloma required a longer operating time and higher morbidity. The decision to proceed for surgery must take into consideration mass size, imaging features and hormonal data.


E-mail address: giorgiolina@libero.it (M.R. Pelizzo).