

Challenges in Hybrid PET / CT Practice

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PET / CT in oncology provides a new direction for lesion characteristics, staging, evaluation of treatment and recurrences. The challenge circumstances using PET / CT scan in cancer hospital are:

1. Previous diagnostic imaging results (CT scan or MRI) are indeterminate, and clinicians require information of non malignant or malignant lesion and staging
2. Cytological examination with malignant cell findings to confirm the presence of a primary tumor.
3. Post-therapy evaluation (surgery, chemotherapy, radiation and hormonal) and recurrence evaluation, or examination from other hospitals with previous imaging not PET / CT scan.

For the first point, evaluation of lesion morphology from diagnostic CT or MRI is important, and diagnostic imaging examination is recommended with contrast and standardized techniques. Oncoanatomy can help characterize the lesion and TNM staging information should be provided.

In the second point, the determination of primary tumor is highlighted on oncoanatomy morphology according to TNM. If there are lesions with secondary infections mimics to cancer spreading, we should be careful to identify and decide primary tumor. To overcome this matter details data of patient with complete disease pathogenesis and imaging series are required.

The third point, is more difficult challenge, because based on the results of the PET / CT scan the clinician will determine further treatment. We should required patient data in details and time line previous treatment as well as the entire series of imaging. PET / CT in the case of malignant lymphoma requires accurate results for the determination of responder or non responder post chemotherapy, cautious interpretation of PET / CT scan results is required.

Conclusion: The optimization and justification using PET / CT should not only known by radiologist and nuclear medicine physician but also oncologist, to achieve optimal result for patient management.