ROLE OF PET/CT IN LYMPHOMA

ESSAY

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تشخيص الأورام الليمفاوية بواسطة إدماج التصوير الطبقي بالبوزيترون المنبعث مع الأشعة المقطعية

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List Of Abbreviations

^{18}F-FDG	^{18} Fluorine-Fluorodeoxyglucose
ALCL	Anaplastic large cell lymphoma
ALK	Anaplastic large cell lymphoma tyrosine kinase
APWN	Aortopulmonary window nodes
ATL	Anterior tongue lymphatics
AxN	Axillary nodes
BALT	Bronchus-associated lymphoid tissue
BMB	Bone marrow biopsy
BTL	Base tongue lymphatics
CHL	Classical Hodgkin Lymphoma
CIN	Common iliac nodes
CLL	Chronic lymphocytic leukemia
CN	Celiac axis nodes
CPN	Cervical pretracheal nodes
CR	Complete response
CRu	Unconfirmed complete response
CT	Computed Tomography
DLBCL	Diffuse large B-cell lymphoma
DN	Diaphragmatic nodes
EBV	Epstein-Barr virus
EIN	External iliac nodes
FL	Follicular lymphoma
GALT	Gut-associated lymphoid tissue
GIT	Gastrointestinal tract
GL	Glottic lymphatics
GLUT	Glucose transporter membrane
H cells	Histiocyte cells
H pylori	Helicobacter pylori
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HHV-8	Human Herpes Virus-8
HIV	Human immunodeficiency virus
HL	Hodgkin Lymphoma

HLTV-1	Human T-lymphocytic virus type 1
HMN	High mediastinal nodes
HN	Hepatic nodes
HPL	Hard palate lymphatic plexus
HSTCL	Hepatosplenic T-cell Lymphoma
IGL	Infraglottic lymphatics
IHP	International Harmonization Project
IL-2	Interleukin-2
IIN	Internal iliac nodes
IJN	Internal jugular nodes
IMN	Internal mammary nodes
IN	Superficial inguinal, deep inguinal nodes
IPN	Internal pudendal nodes
IRN	Inferior rectal nodes
IWC	International Working Criteria
JVN	Juxtavertebral nodes
L cells	Lymphocyte cells
LBG	Locust bean gum
LCP	Left cervical paratracheal nodes
LDCH	Lymphocyte depleted classic hodgkin lymphoma
LDH	Lactate dehydrogenase
LGN	Left gastric nodes
LN	Lymph node
LPN	Left paraaortic nodes
LRCHL	Lymphocyte rich classical hodgkin lymphoma
LRH	Left renal hilum nodes
LUP	Left upper paratracheal nodes
MALT	Mucosa-associated lymphoid tissue
MCCHL	Mixed cellularity classical hodgkin lymphoma
MCL	Mantle cell lymphoma
MN	Mastoid nodes
MRI	Magnetic resonance imaging
NHL	Non Hodgkin Lymphoma
NK	Natural killers
NL	Nasopharyngeal lymphatic plexus
NLPHL	Nodular lymphocyte predominant hodgkin lymphoma

NSCHL	Nodular sclerosis classical hodgkin lymphoma
PAN	Preaortic nodes
PAuN	Preauricular nodes
PCL	Postcricoid lymphatic plexus
PD	Progressive disease
PecN	Pectoral nodes
PEN	Paraesophageal nodes
PET	Positron emission tomography
PFL	Pyriform fossa lymphatics
PFS	Progression-free survival
PG&N	Parotid gland and nodes
PHN	Hilar nodes
PiL	Inferior posterior pharyngeal wall lymphatics
PL	Parametrial lymphatic plexus
PLN	Prelaryngeal nodes
PPL	Periprostatic lymphatic plexus
PR	Partial response
PRL	Perirectal lymphatic plexus
PSL	Paranasal sinuses lymphatics
PsRN	Superior posterior pharyngeal wall lymphatics and retropharyngeal nodes
PTrN	Mediastinal pretracheal nodes
PVgL	Paravaginal lymphatic plexus
PVL	Perivesical lymphatic plexus
PVsN	Prevascular nodes
RAN	Retroaortic nodes
RCP	Right cervical paratracheal nodes
RD	Relapsed disease
RLP	Right lower paratracheal nodes
RPN	Right paraaortic nodes
RRH	Right hilum renal nodes
RS cell	Reed-Sternberg cell
RUP	Right upper paratracheal nodes
SAN	Spinal accessory node
SCN	Subcarinal nodes
ScIN	Supraclavicular nodes
SD	Stable disease
SGL	Supraglottic lymphatic plexus

SMaN	Submandibular nodes
SMeN	Submental nodes
SMN	Superior mesenteric nodes
SN	Sacral nodes
SPD	Sum of the product of the greatest diameters
SPL	Soft palate lymphatics
SplN	Splenic nodes
SRN	Superior rectal nodes
SUV	Standardized uptake value
SVL	Seminal vesicles lymphatic plexus
TL	Tonsil lymphatic plexus
WHO	World Health Organization

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Introduction

Functional imaging with positron emission tomography (PET) is playing an increasingly important role in the diagnosis and staging of malignant disease, image-guided therapy planning, and treatment monitoring. ***(Blodgett et al, 2007)*.**

PET with 18F-FDG (^{18} Fluorine-Fluorodeoxyglucose) provides functional information, but its main drawback of showing few anatomic landmarks impedes precise localization of sites pathologic 18F-FDG uptake. In addition, there are some issues regarding specificity, because 18F-FDG is taken up not only by malignant tumors but also by sites of active inflammation and physiologically by some organs. These shortcomings may be overcome by PET/CT, a method that produces precisely coregistered molecular and morphologic images by allowing them to be obtained on the same scanner without moving the patient. ***(Rodrı´guez-Vigil et al, 2006)***.

PET–Computed Tomography (CT) is a unique combination of the cross-sectional anatomic information provided by CT and the metabolic information provided by PET, which are acquired during a single examination and fused. FDG PET–CT offers several advantages over PET alone; the most important is the ability to accurately localize increased FDG activity to specific normal or abnormal anatomic locations, which may be difficult or even impossible with PET alone**. (*Kapoor et al,2004*)**.

Recently, combined PET and CT scanners have emerged as a promising imaging modality and are being more routinely applied in clinical situations. **(*Tatsumi et al, 2005)***.

Lymphoma is a common hematopoietic malignancy. Accurate diagnosis, correct staging and proper therapy is important for successful outcome. ***(Dhanapathi and Kumar, 2007)***.

Over the last 10-15 years PET scanning has emerged as a powerful imaging modality in the assessment of patients with both Hodgkin's and non-Hodgkin's lymphoma. PET/CT is not only used to identify sites of residual disease after therapy but is a useful tool in staging, restaging, identifying potential biopsy sites and quantifying the response to therapy. Since a PET/CT scan can be used to image the whole body it gives an accurate anatomical distribution of the disease burden within the patient allowing the appropriate therapeutic pathway to be chosen. ***(Drake et al, 2007)***.

A positive PET-CT scans after the completion of therapy is a strong predictor of residual/recurrent disease. The diagnostic accuracy of PET-CT scans is superior to CT scans in evaluating the presence of residual disease after the end of treatment. Identification of patients with sub optimal response with PET-CT may substantially influence future treatment strategies in such clinical settings. ***(Dhanapathi and Kumar, 2007)***.

Aim of work

Accordingly, the aim of work is to emphasize the role of PET/CT in lymphoma.