Diagnostic Role of Diffusion-weighted MR Imaging in Neck Masses.

ESSAY

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I DEDICATE THIS WORK TO MY FATHER, MY MOTHER AND MY BROTHERS

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ACS	anterior cervical space
ADC	apparent diffusion coefficient
AJCC	American Joint Committee on Cancer
AVM	Arterio venous malformation
AVM	arteriovenous hemangioma or malformation
CD	cluster of differentiation
CE-FAST	fast gradient echo
CHL	Classical Hodgkin lymphoma
CS	Carotid space
CT	Computerized Tomography
CXCR	chemokine receptor family
DLBCL	Diffuse large B cell lymphoma
DWI	Diffusion weighted imaging
EBV	Epistein-Barr Virus
EPI	Echo planar imaging
FLASH	Fast Low Angle Shot Magnetic Resonance Imaging
FSE	Fast spin echo
Gd-DTPA	gadolinium Diethylene triamine pentaacetic acid
HIV	human immunodeficiency virus
HL	Hodgkin lymphomas
LRP	The lateral retropharyngeal
MALT	mucosa-associated lymphoid tumours
MPNST	malignant peripheral nerve sheath tumours
MP-RAGE	Magnetization Prepared Rapid Gradient Echo
MRI	Magnetic resonance Imaging
MRP	The medial retropharyngeal
MS	Masticator space
NEX	number of excitations
NF	neurofibromatosis
NHL	Non-Hodgkin lymphomas
NLPHL	Nodular lymphocyte predominant Hodgkin lymphoma
NPV	negative predictive value

PCS	The posterior cervical space
PD	Proton density
PET	positron emission Tomography
PET	photon emission tomography
PGL	persistent generalised lymphadenopathy
PMS	Pharyngeal Mucosal Space
PPPS	Prestyloid parapharyngeal space
PPS	parapharyngeal space
PPV	positive predictive value
PS	Parotid space
PSIF	reverted fast imaging with steady precession
PVS	Prevertebral space
REAL	European- American Lymphoma
RF	The radio frequency
RPPS	Retrostyloid parapharyngeal space
RPS	Retropharyngeal space
RPS	Retropharyngeal Space
SCCs	squamous cell carcinoma
SE	spin echo
SENSE	sensitivity encoding
SPECT	single photon emission CT
SPIO	super-paramagnetic iron oxide
SSFP	steady-state free-precession
STIR	Short time inversion recovery
T	tesla
TAM	The thyroarytenoid muscle
TE	Time to echo
TR	Time to repeat
UICC	Union Internationale contre Le Cancer
USgFNA	ultrasound guided fine needle aspiration biopsy
VS	The visceral space
WHO	World Health Organization
WR	Waldeyer's ring

CHAPTER I

INTRODUCTION AND THE AIM OF THE WORK

INTRODUCTION

A neck mass is a common finding and can present a difficult diagnostic challenge. Differentiation of malignant neck tumours from benign lesions and accurate definite diagnosis are essential for treatment planning as well as for prognosis of malignant tumours. A variety of imaging techniques can help in characterization of neck masses. Ultrasound has a role in cystic lesions but it cannot determine the nature of solid masses. CT is associated with radiation exposure. Different routine pulse sequences of MR imaging cannot accurately differentiate benign from malignant tumours (***Abdel Razek et al., 2008*).**

Metabolic imaging with single photon emission CT (SPECT) and photon emission tomography (PET) can help this differentiation, but they are expensive, less available and have low spatial resolution. Ultrasound (US) and US guided fine-needle aspiration cytology (FNAC) have been extensively used, but this technique is invasive and operator-dependent with high incidence of false negative results that might result from aspiration of the wrong node or the wrong part of the correct node (sampling error) ***(Abdel Razek et al., 2006)***.

Diffusion-weighted imaging is a magnetic resonance (MR) technique that shows potential in the characterization of lesions. It is a