INTRODUCTION AND AIM OF WORK

Introduction

Magnetic resonance imaging (MRI) is a universal physical technique best known for non-invasive detection and anatomical mapping of water protons (^{1}H). Magnetic resonance spectroscopy (MRS) records protons from tissue chemicals other than water. Therefore it is an imaging technique with the potential to record biochemistry in vivo ***(Ross & Bluml, 2001).***

Proton magnetic resonance spectroscopy ^{1}H-MRS provides a bridge between imaging and metabolism. The metabolic changes are most likely to precede anatomic changes during disease progression and treatment. Because ^{1}H-MRS is potentially sensitive to such metabolic changes, it offers methods for early detection of diseases and can influences monitoring the effects of therapy **(Simonetti, et al., 2003).**

^{1}H-MRS gives completely different information related to cell membrane proliferation, neuronal damage, energy metabolism and necrotic transformation of brain or tumour tissues (***Moller, et al., 2002***).

Cerebral abscess may sometimes mimic necrotic tumor and cystic metastases both clinically and radiologically (***Tsui, et al., 2002***). However ^{1}H-MRS is mandatory to distinguish brain abscesses from cystic tumors with similar neuroimaging appearance, which is very important for determining the treatment strategy (***Mishra, et al., 2004***).

Differentiation of radiation necrosis from tumor progression can be done by using ^{1}H-MRS. Further more it can be useful for assessment of acute radiation damage ***(Schlemmer, et al., 2001)***.

In vivo 1H MRS is a noninvasive technique to obtain the metabolite profile of normal and abnormal brain. Several studies have suggested that MRS might noninvasively contribute to the establishment of the differential diagnosis between neoplastic and nonneoplastic abscesses***(Ping-Hong Lai et al.,2007).***

Therefore many recent studies showed that ^{1}H-MRS is useful in differentiating various cystic intracranial lesions (***Shukla, et al., 2001***).

Aim of the work

To highlight the value of Proton MRS in characterization of cystic brain lesions with misleading imaging appearances through studying their spectral patterns and to determine the complementary imaging support of Proton MRS in the differential diagnosis of these lesions and follow up after therapy.