VISION MRI CENTER

G/F., Shop31, Manhattan Plaza, 23 Sai Ching Street, Yuen Long, N.T.

MRI Course – Physical Principles and Applications

Introduction

Magnetic Resonance Imaging (MRI) continues to advance in terms of image quality and utilization for more clinical applications. Keeping abreast of the principles and applications of MRI is essential for career growth. This course will review the physics of image formation as a background for understanding the principles behind various pulse sequencing schemes. Clinical application topics including the design of protocols and imaging procedures will be discussed.

Lecturer: **Mr. Jimmy H. M. Chan (M. Sc.)**
MR Physicist, Vision MRI Centre
Formerly Medical Physicist, Department of Diagnostic Radiology
Affiliated with Tuen Mun Hospital and Queen Mary Hospital

Who should attend:

Any imaging technologists interested in this rapidly expanding and challenging field are encouraged to participate.

Teaching Materials Provided:

Lecture notes and a MRI textbook (*MRI- Physical Principles and Applications, Publisher: Lippincott Williams & Wilkins; Author: Jimmy HM Chan)*

Date: August 2, 9, 16, 23, 30, 2008

Time: Saturday 4:00pm – 7:00pm (3 hours)

Venue: Hong Kong Academy of Chinese Medicine,
10/F, Boan Commercial Building, 198 Nathan Road, Kowloon.
(Jordan MTR Station Exit D)

Language: English, Cantonese

Fee: HK$3,000

Registration Payment: Please send a cheque payable to **VISION MRI CENTER**.

Course outline:

Day 1 **Basic concepts of MRI**

Magnetic moment, magnetization, Larmor equation, spin excitation, spin relaxation, T1 relaxation time, T2 relaxation time and T2* relaxation time, generation of MR signals, magnetic gradients, frequency encoding gradients and phase encoding gradients.

Day 2 **Basic pulse sequences and fast MR imaging**

The study of spin echo pulse sequences, gradient echo pulse sequences, inversion recovery pulse sequences (STIR, FLAIR, the concept of k-space, fast (turbo and turbo-FLASH) gradient echo pulse sequences, fast inversion recovery pulse sequences, echo planar pulse sequences, diffusion weighted pulse sequences and ADC mapping.

Day 3 **Other topics**

MR contrast agents, MR angiography, MR spectroscopy, Fat saturation techniques, magnetization transfer, signal-to-noise ratio, contrast-to-noise ratio, parameters affecting image quality, MR artifacts and MR safety.

Day 4 **Clinical applications**

Applications such as clinical protocols, scan set-up procedures, MR imaging of the brain (including orbits, IAM, pituitary gland and NP), spine (C-spine, T-spine, L-spine), and shoulder, knee, ankle, hips, sacrum, upper and lower abdomen, cardiac imaging

Day 5 **Hand-on operation**

Small groups of attendees will be arranged to visit Vision MRI Center (morning session or afternoon session) and perform MR scanning.

Course Objectives

At the completion of this course attendees will be able to :

- Define the physical concepts used in generating clinical MRI images.
- Describe the effect of different tissue characteristics on the resulting MRI images and reasons for selection of protocol parameters
- Understand the important structure of pulse sequence diagrams
- Identify image artifacts and their causes and techniques for rectification.
- Capable of applying some advanced techniques such as perfusion and diffusion.

For more information, please contact: Mr. Wong Kee Ching Albert Tel: 2380 1298

Enrollment Form

NAME : _____

SEX : _____

HOSPITAL / MEDICAL CENTER : _____

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TEL / MOBILE: _____

FAX : _____