Thesis Title Quantitative Evaluation of Hepatobiliary Scintigraphy using Microdelta Computer

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Date of Graduation 20 May B.E. 2537 (1994)

ABSTRACT

Chronic abdominal pain in the right upper quadrant (RUQ) pain is a relative common condition. Differential diagnosis is rather difficult sometimes. The symptom may be found in hepatocellular diseases, gall bladder diseases or biliary tract obstruction.

Diagnosis by liver function test and qualitative Imaging were inadequate. Radionuclide hepatobiliary scintigraphy used to date, to make differential diagnosis between hepatocyte diseases and gall bladder diseases(1).

Up to now, computer applications that have been used in conjunction with conventional hepatobiliary imaging include quantitative measurement of hepatic extraction fraction (HEF), hepatic uptake

time-to-peak (Tp), half time clearance (T1/2) (2,3,4), gall bladder ejection fraction (GBEF) and ejection period (EP) are evaluated by using software from Microdelta computer which was equipped in our department. We named this study as "Quantitative Hepatobiliary Scintigraphy".

Quantitative hepatobiliary scintigraphy study was developed to study 30 normal Thai volunteers who were free of historical or physical evidence of hepato-biliary diseases, confirmed by normal liver function test (LFT) and complete blood count (CBC).

A normal volunteer was fasting 4-6 hours prior 5 mCi of Tc-99m DISIDA (diisopropyl imino diacetic acid) was administered intravenously. Data collection started immediately in anterior sequential images , in a 64x64 matrix , at 1 minute per frame. Sixty minutes after injection , the volunteer drank 250 ml of Egg Nog through a straw without moving from the camera until 120 frames of imaging data were collected.

Results of the study were as followings:

Time-to-peak (Tp) = 11.1 $\pm$ 1.9 minutes

Half-time clearance (T1/2) = 30.64 $\pm$ 6.09 minutes

Hepatic extraction fraction (HEF) = 101.65 $\pm$ 2.28 %

Gall bladder ejection fraction (GBEF) = 53.48 $\pm$ 15.39 %

Gall bladder ejection period (EP) = 25.35 $\pm$ 12.09 minutes

We concluded that these values from normal Thai volunteers will be very useful in evaluation hepatobiliary function. Differentiation of hepatocellular and gall bladder diseases will be more accurate by interpreting serial hepatobiliary scintigraphy together with the quantitative results.