CHAPTER 1

INTRODUCTION

RATIONALE AND BACKGROUND

Cholangiocarcinoma (CHCA) is a primary cancer of the biliary ductal epithelium originating from the bile duct. CHCA is the second most common primary hepatobiliary tumor after hepatocellular carcinoma, accounting for 5-30% of all primary hepatocellular tumors (1). It is known as a relatively uncommon liver tumor in most parts of the world, with the exception of Northeast Thailand (2-4).

CHCA may originate from the hilar region of the liver (Klaskin tumor), common duct or intrahepatic duct (intrahepatic CHCA or peripheral CHCA). Srinagarind Hospital at Khon Kaen University is the highest referral level center in Northeast Thailand. Hilar and intrahepatic location in patients with CHCA are commonly found in this region. The location of the tumor is one of several factors used to determine the management of CHCA. Other factors include age of the patient, performance status, size, number of lesions, extrahepatic tumor related manifestation, other co-morbid conditions and tumor resectibility. Complete surgical resection offers the only chance of cure for patients with CHCA. Therefore preoperative assessment is essential. Preoperative imagings provide the necessary data used for determining whether a malignant growth is resectable. Imagings provide information on the size and location of the tumor, and the extent

of the intrahepatic lesion. They can also assess the hepatic vasculature and exclude the presence of extrahepatic diseases.

Complete surgical resection remains the most effective therapy for patients with CHCA. Different locations of CHCA require different operative procedures. In particular, the hilar CHCA require a more aggressive surgical therapeutic procedure. Resection of hilar CHCA offers long term surgical survival only when surgery is aggressive and includes liver resection (5-16). Accurate assessment of the biliary system in patient with CHCA was helpful for planning the surgical procedure (15, 17-22).

Numerous imaging studies have addressed the role of transabdominal ultrasonography (US). Techniques include computed tomography (CT), dynamic CT during the arterial and portovenous phase. Magnetic resonance imaging (MRI) employs special techniques such as magnetic resonance cholangiopancreatography (MRCP) and magnetic resonance angiography (MRA). Direct conventional cholangiography includes endoscopic retrograde cholangiopancreatography (ERCP) and percutaneous transhepatic cholangiopancreatography (PTC), while visceral arteriography is used for the detection and characterization of hepatic lesions (22-33), assessment of vascular involvement (23, 25, 34, 35) and localization of the tumor (19). New techniques such as 3D sonography, 3D computed tomography (3D CT) and endoscopic ultrasonography are currently being developed.

Before the development of MRI and special techniques such as MRCP, the best imaging methods for assessing the level of obstruction and length of the biliary duct involvement were usually direct invasive procedures such as ERCP, PTC, intraoperative cholangiography and percutaneous transhepatic biliary drainage (PTBD). However, these procedures carry a certain degree of risk (36-38). ERCP remains a commonly used procedure to assess biliary obstruction in spite of the degree of risk, and failure to achieve the procedure-stage goal.

Sonography remains the initial and most common imaging study in the biliary tract evaluation (34, 39-41), but the results of this noninvasive technique are usually inferior to those of invasive procedures.

MRCP is a relatively new, noninvasive adjunctive procedure that requires neither contrast agent injection nor any other forms of intervention to assess the biliary tract (39, 40, 42-50). Only limited data is available regarding the results of MRCP in the diagnosis and assessment of CHCA, particularly hilar CHCA (39, 40, 43, 45, 47, 49-57).

This study aims to determine the diagnostic performance of MRCP in patients with hilar CHCA. If the MRCP performance is satisfactory, the results of imaging will be useful for the management of patients with CHCA. The results of imaging will influence operative planning, surgical procedure, and also the decision to select which patients should under go an operation, subsequently affecting the outcome of treatment and the quality of life of CHCA patients.

SUMMARY OF RATIONALE AND BACKGROUND

Srinagarind Hospital in Northeast Thailand has the highest number of patients with CHCA. Complete surgical resection provides the only chance of cure for patients with CHCA. Recently, the majority of the reports from 1998 to 2000 recommended that the treatment for hilar CHCA should be aggressive surgery, which offers long term survival. Preoperative imaging of the biliary tree provides essential information for planning surgical procedurs. It also helps in the selection of patients who might benefit from extensive surgery, particulary in hilar CHCA which requires a more aggressive operation. Before the development of MRI and its special technique, the best imaging procedure was the use of direct cholangiography such as the ERCP, an invasive procedure. It carries a certain

degree of risk and failure. There is limited information about MRCP for the assessment of CHCA. This study aims to evaluate the diagnostic performance of MRCP in patients with hilar CHCA.