

DIAGNOSTIC POSSIBILITIES OF SCLEROSING CHOLANGITIS AND CHOLANGIOCARCINOMA WITH MAGNETIC RESONANCE IMAGING COMPARED TO ULTRASOUND

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Introduction

Cholangiocarcinoma (CC) is a malignant neoplasm deriving from intra- and extrahepatic bile ducts. There are no clear etiological factors that might have some causal impact on the development of bile duct neoplasias. The “gold standard” test used in the detection of sclerosing cholangitis and cholangiocarcinoma is biopsy. However, being an invasive procedure it is associated with a morbidity of 1-7% and mortality of 0.2-1%. Magnetic resonance cholangiopancreatography (MRCP) has recently been developed as a non-invasive and yet highly sensitive method of investigating the biliary tract. Ultrasound (US) is the initial imaging test used in the evaluation of patients with suspected biliary tract disease.

Aim

To determine the diagnostic accuracy, sensitivity and specificity of magnetic resonance cholangiopancreatography (MRCP) and trans-abdominal ultrasound (US) in the detection of sclerosing cholangitis and cholangiocarcinoma; to establish the most informative non-invasive method for detection of sclerosing cholangitis and cholangiocarcinoma.

Methods

The study was carried out of medical records of 122 patients from 2000 to 2004 years. MRCP was performed with CHOL/Radial sequences, heavily T2-weighted TSE sequence (TR=6000 ms, TE=1500 ms). A non-breath-hold, respiratory-triggering with pear technique was used to decrease the respiratory motion artifact. For the purposes of this study, findings of the US, MRCP and biopsy of each patient were collected and patient's details masked. The MRCP films and US findings were independently analysed by two radiologists who were unaware of the other imaging findings. Of 122 consecutive patients referred for diagnostic biopsy, sclerosing cholangitis or cholangiocarcinoma was diagnosed in 39 patients. All patients underwent MRCP and US examinations and their finding for these diseases were compared with those at direct biopsy. According to the methodical recommendations of David J.Ott and David W.Gelfand (1985 year) the diagnostic accuracy, sensitivity and specificity of magnetic resonance cholangiopancreatography (MRCP) and trans-abdominal ultrasound (US) was determined comparing with the final diagnosis made by direct biopsy. The Student's t-test was used for testing statistical reliability. The computer programme SPSS 8.0 was used for this purpose.

Results

The overall number of patients who underwent US, MRCP and biopsy was 122, included 80 females and 42 males. Median age was 59,64 years (age ranging from 3 to 83 years). Among the 122 cases, 39 (32%) were diagnosed as proliferative biliary tract diseases, i.e. cholangitis scleroticans 28 (23%) and cholangiocarcinoma 11 (9%). We found obstructive biliary tract diseases in 28 (23%), inflammatory strictures - in 7 (6%) and other different (benign or malignant) tumors - in 37 (30%) patients. We were interested in proliferative biliary tract diseases (cholangitis scleroticans and cholangiocarcinoma). MRCP using our technique produced images of sufficient quality and spacial resolution to detect proliferative biliary tract diseases (Fig.1). MRCP resulted in 20 true-positive, 74 true-negative, 9 false-positive and 19 false-negative findings. MRCP showed a sensitivity, specificity and diagnostic accuracy of 51%, 89% and 77%, respectively. Ultrasound (US) resulted in 6 true-positive, 81 true-negative, 2 false-positive and 33 false-negative findings. US showed a sensitivity, specificity and diagnostic accuracy of 15%, 98% and 71%, respectively, in the diagnosis of sclerosing cholangitis or cholangiocarcinoma. All these findings are statistically reliable ($p < 0.05$).

Conclusions

1. Our study showed that MRCP had a high sensitivity, specificity and accuracy of 51%, 89% and 77%, respectively, in the diagnosis of sclerosing cholangitis and cholangiocarcinoma.
2. In comparison, ultrasound (US) had a sensitivity, specificity and diagnostic accuracy of 15%, 98% and 71%, respectively. MRCP is 36% more sensitive and 6% more accurate than US, but US is 9% more specific than MRCP.
3. MRCP is the most informative non-invasive method for detection of sclerosing cholangitis and cholangiocarcinoma.

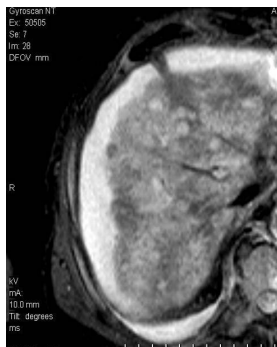


Fig.1a

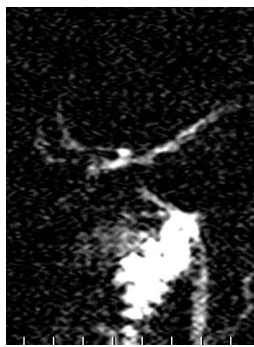


Fig.1b

Fig.1a - T2/TSE axial imaging of 61 years old patient with cirrhosis of the liver and cholangiocarcinoma shows multiple metastasis and ascitis.

Fig.1b - CHOL/Radial imaging of 32 years old patient with sclerosing Cholangitis (after acute pancreatitis) shows multiple irregularity and stricture of biliary tree.