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SCIENCE DIRECT
Cancer Letters 237 (2006) 115–122
CANCER Letters
www.elsevier.com/locate/canlet

Resection of lung metastasis from gallbladder carcinoma: immunohistochemistry of RCAS1 and CD8$^+$T cells in primary and metastatic tumors

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Received 3 February 2005; received in revised form 23 May 2005; accepted 28 May 2005

Abstract

Advanced Gallbladder cancer has an extremely poor prognosis. We examined a patient with resectable gallbladder cancer with associated lung metastasis. A 64-year-old female patient, diagnosed with gallbladder cancer and a solitary benign lung tumor by imaging, was subjected to extensive cholecystectomy and extrahepatic bile duct resection. After one year, a follow-up CT indicated enlargement of the lung tumor; video-assisted right middle lobectomy was then performed. The lung tumor was diagnosed as a metastasis derived from the gallbladder cancer by pathology and immunohistochemistry. Expression of RCAS1, an independent unfavorable prognostic indicator in gallbladder cancer, was observed in both the gallbladder and lung tumors. However, infiltration of CD8$^+$T cells was only seen in the lung metastatic tumor. She has remained free of any evidence of recurrence in the 10 months and 4 years after the first surgery. The results that metastasis is solitary and infiltrated by CD8$^+$T cells correspond with the present clinical history.

Keywords: Immunohistochemistry; CD8$^+$T cells; Thyroid transcription factor 1; RCAS1

1. Introduction

While gallbladder cancer (GBC) has an extremely poor prognosis, recent advances introducing extended surgical therapy combining liver resection with wide lymph node dissection is beginning to improve the long-term survival of patients with GBC [1,2]. Using this methodology, Tsukada et al. achieved excellent 5-year survival rates in patients with stage I and II tumors. The 5-year survival rate, however, is highly reduced to less than 5% when noncurative resections involving distant metastasis were performed [3]. To understand the molecular basis of GBC, we previously investigated a novel tumor-associated antigen found in GBC; Receptor-binding cancer antigen

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doi:10.1016/j.canlet.2005.05.050

expressed on SiSo cells (RCAS1) correlated significantly with tumor progression, predicting a poor outcome in gallbladder cancer [4]. In this study, we examined a rare case of long-term disease-free survival in a patient with a solitary metastatic lung tumor derived from GBC. We identified the lung tumor as a metastasis by immunostaining with anti-thyroid transcription factor 1 (TTF-1) antibodies. To investigate the characteristics of the primary gallbladder and metastatic lung cancer cells, we also examined the expression of RCAS1 and infiltration of $CD8^+$T cells.

2. Case report

In March of 2000, a 64-year-old female patient was referred to our hospital with right upper quadrant pain. Laboratory findings were unremarkable, with negative results for carcinoembryonic antigen (CEA). Magnetic resonance cholangiopancreatography (MRCP) and computed tomography (CT) of the abdomen revealed a gallbladder tumor (Fig. 1A and B). CT of the lung indicated a solitary tumor in the right middle lobe. As neither spicula nor pleural effusions were seen, we diagnosed the tumor as

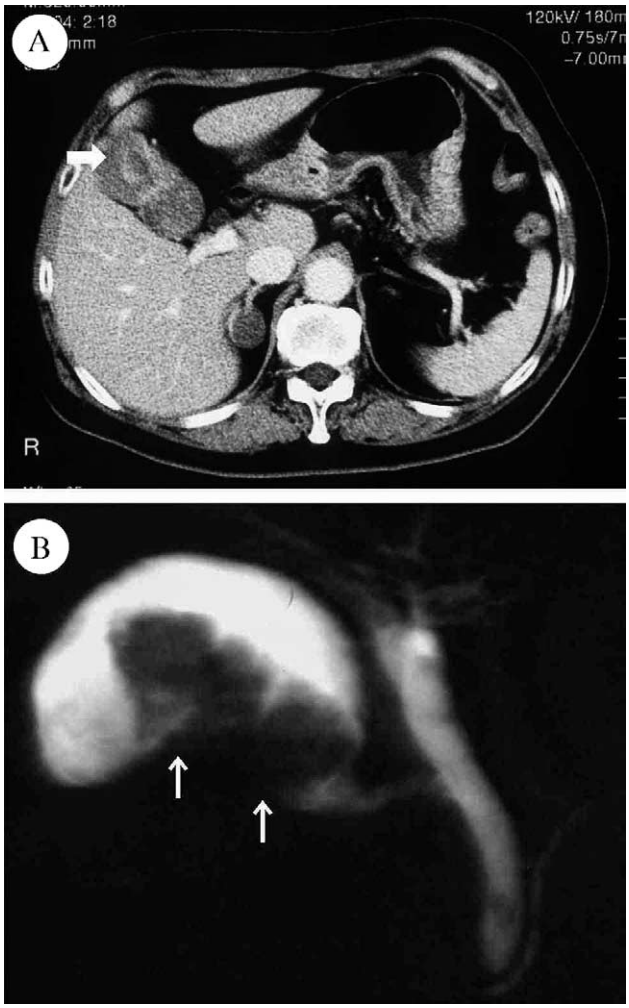

Fig. 1. (A) CT of the abdomen and (B) magnetic resonance cholangiopancreatography (MRCP) revealed the presence of a gallbladder tumor (arrows).