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Chronic Diseases and Translational Medicine 3 (2017) 60−66

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Original Article

# Clinical epidemiological survey of gallbladder carcinoma in northwestern China, 2009−2013: 2379 cases in 17 centers

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Received 21 September 2016
Available online 22 February 2017

## Abstract

**Objective:** To analyze the clinical epidemiological characteristics of patients with gallbladder carcinoma recruited from 17 hospitals in five northwestern provinces of China (Shaanxi Province, Gansu Province, Qinghai Province, Ningxia Hui Autonomous Region, and Xinjiang Uygur Autonomous Region) from 2009 to 2013, and to summarize the clinical diagnosis and treatment data of gallbladder carcinoma.

**Methods:** Clinical information of 2379 patients with gallbladder carcinoma from 17 hospitals in five northwestern provinces of China was retrospectively collected and analyzed using the "Questionnaire for Gallbladder Carcinoma Patients in Northwestern Area of China." All information was verified with EpiData software and analyzed with SPSS 13.0 software.

**Results:** (1) Gallbladder carcinoma accounted for 2.7% (2379/86,609) of all biliary tract diseases during the study period, which was significantly higher than that from 1986 to 1998 ($P < 0.001$). (2) Gallbladder carcinoma was more prone to occur in elderly women. The male:female incidence ratio was 1.0:2.1, the average age of onset of disease was 63.7 ± 11.3 years, and the incidence

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Peer review under responsibility of Chinese Medical Association.

Production and Hosting by Elsevier on behalf of KeAi

http://dx.doi.org/10.1016/j.cdtm.2017.01.003

was higher in farmers than in other occupational groups. (3) A total of 57.2% (1360/2379) of patients with gallbladder carcinoma also had gallstones. (4) Abdominal pain (1796/2379, 75.5%) and jaundice (727/2379, 30.6%) were the most common clinical manifestations, 81.2% (1527/1881) were positive in those receiving B ultrasound examinations and 90.7% (1567/1727) were positive in those undergoing computed tomography, and 64.5% (1124/1742) of patients with gallbladder carcinoma were positive for carbohydrate antigen (CA) 19-9. (5) The pathological type of gallbladder carcinoma was mainly moderately and poorly differentiated adenocarcinoma with a high degree of malignancy. At admission, 55.1% (1091/1981) of patients had stage IV cancer among patients with TNM staging information; 55.9% (1331/2379) had lymphatic metastasis, 29.7% (706/2379) had bile duct metastasis, and 53.1% (1263/2379) had liver metastasis. (6) A total of 283 patients (283/2379, 11.9%) had incidentally detected gallbladder carcinoma. (7) The rate of radical surgical resection was 30.4% (723/2379).

**Conclusion:** The proportion of gallbladder carcinoma in biliary tract diseases in the northwestern area of China was significantly higher from 2009 to 2013 than from 1986 to 1998. Gallbladder carcinoma was common in older women and mainly diagnosed at an advanced stage. Compared with other surveys in different regions, the rate of metastasis in this survey was high, leading to a low resection rate. Populations at high risk should undergo B-ultrasound examinations at regular follow-up intervals to increase the rate of early diagnosis of gallbladder carcinoma.



*Keywords:* Gallbladder carcinoma; Epidemiology; Incidence; Risk factor; Northwestern China

## Introduction

Gallbladder carcinoma is the most common malignant tumor in the biliary tract and the sixth most common gastrointestinal cancer.[1] Gallbladder carcinoma has a low early diagnosis rate, a low radical surgical resection rate, and an extremely poor prognosis. In one study, the average survival period of patients with advanced gallbladder carcinoma was 6 months, and the 5-year survival rate was only 5%.[2] The worldwide incidence rate of gallbladder carcinoma is low (<2/100,000), but shows obvious regional and ethnic differences.[3] The prevalence is higher in Chile, Poland, northern India, and South Korea, and is the highest in Chile (female incidence rate of 27.3/100,000).[2] In 2009, the morbidity rate of gallbladder cancer and cholangiocarcinoma in Chinese cancer registration areas was 4.31/100,000, and the population-standardized incidence rate was 1.93/100,000,[4] which was equal to the worldwide level. However, an epidemiological survey of gallbladder carcinoma in China from 1986 to 1998 showed that gallbladder carcinoma was more prevalent in the northwestern area of China.[5] In the present survey, we analyzed the clinical epidemiological characteristics of patients with gallbladder carcinoma from five northwestern provinces of China and summarized the diagnosis and treatment of gallbladder carcinoma.

## Methods

### *Data sources*

We retrospectively collected clinical information of 2379 patients with gallbladder carcinoma recruited from 17 tertiary hospitals in 5 northwestern provinces of China from January 2009 to December 2013. This study was approved by the medical ethics committee of each hospital. The 17 involved hospitals are the largest local hospitals, allowing for accurate reflection of the clinical features and epidemiological characteristics of gallbladder carcinoma in the northwestern area of China. Meanwhile, the total number of patients with biliary tract diseases was collected from the information department of each hospital according to the biliary tract disease codes (K80, K81, K82, and K83) of the International Classification of Diseases, 10th Revision (ICD-10). The total number of patients with abdominal surgical diseases was collected from the Patient Discharge Form.

### *Diagnostic criteria*

Gallbladder carcinoma was diagnosed according to the definition formulated by the World Health Organization in 2010.[6] The diagnosis included type I diagnosis (histopathological findings) and type II diagnosis (clinical and imaging examination). Two senior pathologists from the Department of Pathology of the First Affiliated Hospital of Xi'an Jiaotong University examined all pathological sections and made the type I diagnosis. The TNM stage was determined based on the 7th edition of the 2010 diagnostic criteria of the American Joint Committee on Cancer.[7]

### *Survey*

All involved patients were surveyed with the "Questionnaire for Gallbladder Carcinoma Patients in Northwestern Area of China," which was filled out by