



Review

Report on demographics of gall bladder cancer in Delaware and retrospective review of treatment strategies for gallbladder cancer in a large community cancer center



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ABSTRACT

Background: GBC is frequently found incidentally on pathologic review of the removed gallbladder. NCCN guidelines have treatment recommendations based on specific stage of gallbladder cancer (GBC). However, there is limited information on the experience of community cancer centers in treating GBC based on these guidelines.

Objective: To utilize the Delaware cancer registry to describe patients with GBC in Delaware, and to conduct a review of the treatment strategies and outcomes of GBC at a large community cancer center. **Methods:** A retrospective cohort study of GBC cases in the state of Delaware utilizing the statewide cancer registry to gather useful demographic and treatment information, such as patient age, gender, date of diagnosis, type of surgeries, systemic or radiation therapy, and survival time. Analysis of surgical management of GBC at Delaware's largest community cancer center comparing their management of patients with different AJCC stages of GBC to the NCCN guidelines.

Results: Our analysis revealed that there were 109 patients diagnosed with GBC in Delaware from 1995 to 2012. The male to female ratio was 2.7:1 and average age at time of diagnosis was 68. Most of GBC diagnosed were stage T2. During this time period, there were 23 extended radical cholecystectomies done for stage T2 and above GBC. Most of the ERC surgeries were performed by fellowship trained surgical oncologists. Our results show that there was mortality benefit in all operable stages of GBC, and the average survival time was higher for all T2 and above stages of GBC.

Conclusion: A statewide cancer registry is instrumental in retrospective review of demographics and treatment outcomes for rare and aggressive tumors such as GBC. We demonstrated that a large community cancer center, such as Christiana Care Health System, with on staff surgical oncologists is capable of providing GBC treatment that is according to NCCN guidelines and comparable to major academic centers based on mortality outcomes.

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1. Introduction

GBC is the most common biliary tract tumor in the world. It is also the most aggressive type of all biliary tract cancers and carries the worst prognosis [5]. All biliary tract cancers are invasive adenocarcinomas that arise from the epithelial lining of the gallbladder and intrahepatic and extrahepatic bile ducts [4]. Although anatomically these malignancies are related and have similar metastatic patterns, each has a distinct clinical presentation, molecular pathology, and prognosis. GBC has a particularly high incidence in Chile, Japan, and northern India [1]. The biggest risk factor for GBC is chronic inflammation that leads to porcelain gallbladder [1]. However, only approximately 6% of gallbladder cancers arise in a porcelain gallbladder [2]. It affects women more commonly than men in all populations [5]. The highest frequency occurs among women over 65 years of age with a long history of gallstones. In a series from Mayo Clinic Rochester, the female-to-male ratio was reported as 2.5:1 [7]. However, as the sixth most common gastrointestinal malignancy in the USA, GBC remains a relatively uncommon malignancy [3]. American Cancer Society predicts that in the year 2015, there will be about 4000 new cases of GBC diagnosed in USA [8].

GBC is most frequently diagnosed at an advanced stage. It commonly presents as biliary colic, and is diagnosed incidentally during surgery or on pathologic review of resected gallbladder [1]. Mortality from GBC is closely associated with tumor stage. Five-year survival can range from 60% to 1% for stage-0 to stage-IV disease [3]. Therefore, after establishing the diagnosis, high quality imaging is recommended for tumor staging (AJCC TNM criteria) by looking for tumor penetration, invasion of other biliary system or surrounding organs, vascular invasion, and any nodal or distant metastasis [3].

Surgery is the only treatment modality for GBC that is shown to increase survival rate, however, there is limited data on what is considered optimal resection. Major factors determining tumor resectability include its location and stage [4]. Evidence from recent retrospective studies suggests that 74% of patients who underwent surgical re-exploration following an incidental diagnosis of GBC on laparoscopic cholecystectomy were found to have residual cancer [1]. It is also known that achievement of R0 resection margins strongly correlates with long-term survival [3]. Therefore, the current NCCN guidelines recommend that patients who are found to have resectable disease on imaging or during cholecystectomy should undergo extended radical cholecystectomy (ERC) with hepatic resection, lymphadenectomy, and bile duct exploration/excision [1]. For patients in whom GBC is found incidentally on pathologic review, T1a lesions may be observed without any further surgery if tumor margins are negative. But patients with T1b or greater lesions should be treated with ERC after metastatic disease is ruled out [4].

Given that most of GBC cases are diagnosed at advanced stage and require extensive surgical intervention, it may be expected that better treatment outcomes are achieved at large academic centers.

There is limited data reviewing the experience of community cancer centers in managing advanced malignancies such as GBC. Therefore, we present here our experience in utilizing the Delaware cancer registry as a vital instrument to conveniently gather demographics of patients with GBC in our state, and to perform a retrospective review of GBC treatment at the state's largest community cancer center.

2. Methods

The study protocol was approved by the Institutional Review Board of Christiana Care Health System (CCHS). The Delaware cancer registry collects important information about cancer occurrences in Delaware including demographics of patients, diagnostic, and treatment records. The registry was queried for GBC cases from 1995 to 2012. Information gathered from the registry included patient age, gender, race, type of surgery, clinical stage of tumor, surgeon information, and survival time. The hospital's electronic health record (EHR) was used for chart reviews to verify the information obtained from the cancer registry and to review additional information, such as pathology and surgical procedure notes. Once chart review was complete, Microsoft Excel® was used to create a data capturing instrument that recorded information about patient for every tumor stage, such as year of diagnosis, age at time of diagnosis, ethnicity, gender, type of surgery, surgeon who performed the surgery, vital status, and survival time. Types of surgeries included laparoscopic cholecystectomy (LC), open cholecystectomy (OC), exploratory laparoscopy/laparotomy (EXL), or extended radical cholecystectomy (ERC). ERC involves removal of gallbladder with en-bloc subsegmental resection of the adjacent hepatic parenchyma of segments IVB and V and a regional lymphadenectomy that includes complete removal of the hepatoduodenal ligament lymph nodes, plus the common hepatic artery and retropancreatic lymph nodes [5]. The data was analyzed to show the number of ERC that were done at CCHS during 1995–2012 for GBC ranging from stage T-is to T4. Graphical analysis was done to show incidence of GBC and GBC related mortality from 1995 – 2012, and the average length of survival with or without ERC for different tumor stages.

3. Results

3.1. Epidemiology

The Delaware Cancer Registry was queried for new cases of GBC diagnosed from 1995 to 2012. The search revealed a total 109 cases that were diagnosed after pathological review of gallbladder tissue. The data showed an almost three-fold increase in the incidence of GBC. In 1995 there were 5 cases diagnosed, whereas in 2012, there were a total of 14 cases diagnosed. The mortality from GBC decreased slightly during this time period from 60% in 1995 to 50% in 2012 (see Fig. 1).

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