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Epidemiology of Hepatocellular Carcinoma (HCC) In Tertiary Level Hospitals in Bangladesh

Khan AAM*

Shaheed Suhrawardy Medical College, Bangladesh

***Corresponding author:**

Abdullah Al Mamun Khan,
Shaheed Suhrawardy Medical College,
Bangladesh, Tel: 01712184919,
E-mail: mamun3737@gmail.com

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1. Abstract

1.1. Background: HCC is the most common primary liver malignancy and cause of cancer-related death worldwide including Bangladesh. It occurs more often in males than females. The incidence of HCC continues to escalate due to HBV, HCV infection, non-alcoholic fatty liver disease (NAFLD). HBV and HCV are also important etiological factors for developing chronic liver disease (CLD) and HCC.

1.2. Methods: The study was an observational study. All HCC patients in National Institute of Cancer Research and Hospital(NICRH) and Shaheed Suhrawardy Medical College Hospital(ShSMCH), Dhaka, Bangladesh from Jan.2010 to Dec.2019 were included. Clinical information and demographic profiles were recorded from departmental documents and retrospectively studied. Patients were arranged as Birch Classification.

1.3. Results: Of 1028 patients, 752 (73.15%) were male and 276(26.85%) were female; male female ratio was 2.72:1. The average age of HCC onset was 57.9, lowest age was 23 years old and highest was 90 years. The leading age group was ≥60 years, 315 (30.64%) followed by 50-59 year 256 (24.90%), 40-49 year 254 (24.71%). 106 (10.31%) patients presented with metastasis. 688 (66.92%) patients had habitual problems. 478 (46.50%) patients were infected with HBV, 56 (5.45%) were infected with HCV, 632 (61.48%) were suffering from CLD, 180 (17.51%) from NAFLD and only 48 (4.46%) had family histories of malignancy. 240 (23.36%) patients presented with comorbidities. Only 13 (1.26%) were vaccinated against HBV and none had attended for HCC screening. Most patients were poor, 724 (70.43%%) and 683 (66.44%) were illiterate. The leading profession was farmer, 408 (39.69%), followed by housewife, 223 (21.70%). The leading symptom was pain, 348 (33.85%) followed by anorexia, 327 (31.81%), right hypochondriac heaviness, 284 (27.63%). 267 (25.97%) patients presented with impaired liver function, and 339 (32.97%) presented with high alfa feto protein (AFP). 521 (50.68%) patients were on symptomatic treatment prior to attending an oncologist.

1.4. Conclusions: HCC is an aggressive cancer and concomitant liver dysfunction with advanced disease impedes curative therapies. HCC can be prevented if appropriate measures are taken, such as HBV vaccination, screening of blood products, use of safe injection practices, treatment and education of alcoholics and drug users.

2. Introduction

Hepatocellular carcinoma (HCC) is the most common primary liver cancer and is a fifth most common cancer worldwide and third leading cause of cancer related death. [1] HCC occurred more often in males than females (2.4:1) with a higher incidence in Eastern and Southern Asia, Middle and Western Africa, Melanesia and Micronesia or Polynesia. [2] The age-adjusted incidence of liver cancer has risen from 1.6 per 100,000 individuals among American Indians and Alaskan Natives followed by blacks, whites and Hispanic. [3] Globally, over half a million people develop HCC each year and almost equal number die of it. [4] HCC has various criteria with marked variations among geographic regions, racial, ethnic groups, sexes and risk factors. Many studies shown that HCC usually occurs in an established background of chronic liver disease(CLD) and cirrhosis.

Causes of cirrhosis in patients with HCC mostly are hepatitis B virus (HBV), hepatitis C virus (HCV), alcoholic liver disease and nonalcoholic steatohepatitis (NASH). In addition, hereditary hemochromatosis, alpha-antitrypsin deficiency, autoimmune hepatitis and some porphyria have also been associated with minor etiological factors in some patients with HCC. [5] Pathogenesis, clinical features, prognosis and interventional strategies have led to develop mechanisms of early diagnosis and improved management against HCC in most developed countries. [6] But this success has not been duplicated worldwide [7, 8].

Bangladesh is a developing country with a population of 180 million. It was estimated that more than 8 million people were chronically infected with HBV [10] and about 1 to 2 million with HCV.10 Khan et al showed that liver cirrhosis was a causing factor of HCC of 18.5% by examining a cohort of 64 patients in Bangladesh in 1997 [11] .

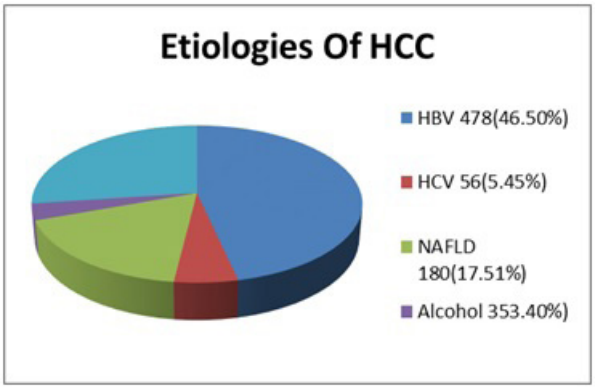
3. Materials and Methods

The study was an observational study. All histologically confirmed HCC patients in National Institute of Cancer Research and Hospital(NICRH) or Shaheed Suhrawardy Medical College hospital(ShSMCH), Dhaka, Bangladesh from Jan.2010 to Dec.2019 (10Years) were included. Clinical information including symptoms and sign, demographic profiles and investigation results were recorded from departmental documents and retrospectively studied. Patients were arranged as Birch Classification at ten years' interval.

4. Results

(Table 1) Total 1028 patients were enrolled for this study. Of them, male was 752(73.15%) and female was 276(26.85%) and the male female ratio was 2.72:1. The average age of HCC develop was 57.91, the youngest age of HCC patient was 23 and eldest was 90 years. The leading age group was ≥60 years, 315(30.64%) patients followed by 50-59 years 256(24.90%), 40-49 years 254(24.71%), 30-39 years' age group was 138(13.42%) and below 30 years' age group was only 65(6.32%). 106(10.31%) patients were presented with metastasis where bone metastasis was in 22(2.14%)patients, lung metastasis was in 60(5.84%)patients and lymph nodes metastasis was in 24(2.33%) patients. 688(66.92%) patients had personal habitual problems like 382(37.16%) patients used tobacco, 271(26.36%) used betel nut and 35(3.40%) patients drunk alcohol. HBV 478(46.50%) patients were infected with HBV, 56(5.45%) were infected with HCV and 532(51.75%) were suffering from CLD before developing HCC, 180(17.51%) from NAFLD and only 48(4.46%) had family histories of malignancies of different types. 240(23.36%) patients were presented with different comorbidities, 114(11.10%) had suffering from diabetes mellitus, 88(8.56%) had hypertension and 38(3.70%) had asthma or COPD. Only 13(1.26%) were vaccinated against HBV and none were attended at HCC screening. Of them, 683(66.44%) were illiterate and 234(22.70%) patients were educated up to primary, 58(5.64%) had passed S.S.C, 42(4.1%) completed graduation and 11(1.1%) were completed masters. The leading profession was farmer, 408(39.69%) followed by house wife 223(21.70%). Maximum patients were poor, 724(70.43%%) followed by below average 168(16.34%).

The leading clinical features were shown in (Table 2).



Figure

Table 1: Demographic profile of patients of HCC in Bangladesh(n=1028)

Age	
Mean ±SD	57.91 ± 20.21 years.
Range	23-90 years
Sex	
Male	752(73.15%)
Female	276(26.85%)
Occupation	
Farmer	408(39.69%)
Housewife	(21.70%)
Business	104(10.12%)
Job	96(9.34%)
Labour	94(9.14%)
Student	(5.45%
Others	47(4.6%)

Table 2: Clinical features of patients with HCC

Pain	348(33.85%)
Anorexia	327(31.81%)
Abdominal mass/ Right hypochondriac mass	284(27.63%)
Weight loss	128(12.45%)
Fever	130(12.65%)
Nausea	96(9.34%)
Jaundice	110(10.7%)
Anemia	208(20.23%)
Leukonychia	48(4.67%)
Edema	112(10.9%)
Gynecomastia	102(9.92%)
Ascites	140(13.62%)
Testicular atrophy	352(46.81%)
Palmar erythema	65(6.32%)
Spider telangiectasia	208(20.23%)

The majority patients presented with pain, 348(33.85%) followed by anorexia,327(31.81%), right hypochondriac heaviness, 284(27.63%), abdominal swelling, 140(13.62%), fever,130(12.65%), nausea 96(9.34%), Weight loss,128(12.45%), jaundice 110(10.7%), Anemia, 208(20.23%), Leukonychia, 48(4.67%), edema ,112(10.9%), Gynaecomastia, (9.92%), Ascites,13.62%), testicularatrophy,352(46.81%), Palmar erythema,65(6.32%), Spider telangiectasia,208(20.23%). 267(25.97%) patients were presented with impaired liver function (visceral crisis) and 339(32.97%) presented with high AFP (alfa feto protein). 521(50.68%0 patients were on symptomatic treatment prior to attend oncologist or hepatologist and average delay to attend oncologist or hepatologist was 115days.

5. Discussion

It is known that cirrhosis is present in 80〜90% of HCC patients with any underlying liver disease, [14] and it is the most important risk factor for HCC. This study presented here shown that maximum of the patients of HCC at Bangladesh were infected with HBV infection 478(46.50%) and 532(51.75%) were suffering from CLD before developing HCC. The results of this study have some difference with previous publications in 2013 about HCC in Bangladesh [12] by ABM Shakil Gani et al about Characteristics Features of Hepatocellular Carcinoma in Bangladesh and their Public Health Implications. The results of the study are not in line with previous publications in 1990s about HCC in Bangladesh, [10, 12] the data presented here are in line with that what has been reported by Kumar et al about etiology and cirrhosis of HCC patients in India, [13] a close neighbor of Bangladesh.

In addition, this study revealed that none were attended at HCC screening. Majority of patients were unaware of their CLD before attending the tertiary hospitals. Patients presented with complains like abdominal pain, weight loss, fever, jaundice and palpable mass in the abdomen. The extent of liver cirrhosis was also in progressive state. Unfortunately, most of the patients attended the physicians after development of HCC. Only 13(1.26%) were vaccinated against HBV. These facts unveil the importance of awareness about hepatotropic virus and follow-up of patients with CLD at an early stage. As most patients had advanced HCC, this will comprise their ultimate survival. However, comparison of the incidence of HCC in various liver diseases was not accurately and precisely evaluated in previous studies. In this study, we found that the incidence of HCC is highest in HBV LC (46.50%) and second highest with NAFLD 180(17.51%) and only 48(4.46%) had family histories of malignancies HCV LC 56(5.45%), followed by alcoholic LC 35(3.40%).

In addition, the aging of the patients must be taken into the consideration, as the cirrhotic patients were considered to be older than the non-cirrhotic patients in almost all liver diseases. The average age of HCC develop was 57.91 years. In this regard, Asahina et al [15] investigated the difference of HCC incidence in aging in HCV-associated liver disease, and found that the incidence of HCC was higher in the older patients (>65 years old) than the younger patients (<65 years old). The same tendency was observed by Taura et al [16]. However, the difference in incidence was approximately twofold. So, it is difficult to explain the marked difference in HCC incidence between the cirrhotic state and non-cirrhotic state found in this meta-analysis.

6. Conclusion

HCC is an aggressive cancer that frequently presents in advanced stages. Concomitant liver dysfunction with advanced stages disease impedes curative therapies. HCC can be prevented if appropriate measures taken like HBV vaccination, screening of blood products, use of safe injection practices, treatment and education of alcoholics and drug users.

In Bangladesh HCC occurs comparatively at earlier age and none had any idea of their liver disease prior to diagnosis of HCC. It was an alarming that only 13(1.26%) were vaccinated against HBV. A mechanism should have developed in Bangladesh to diagnose the mechanism of cirrhosis early to treat properly. Thorough screening and vaccination program should be run that would lead to better survival of HCC patients.

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