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A STUDY ON PREVALENCE OF CHOLANGIOCARCINOMA AND ITS CAUSING RISK FACTORS AMONG POSTPARTUM WOMEN OF URBAN RESIDENTS OF WEST BENGAL: A CROSS-SECTIONAL, OBSERVATIONAL STUDY

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Abstract

Background: Cholangiocarcinoma (CCA) is a rare but aggressive malignancy arising from the biliary epithelium. Although more prevalent in certain global regions, emerging evidence indicates an increasing trend in urban populations of India, including West Bengal. This study aims to assess the prevalence of cholangiocarcinoma and its associated risk factors among urban residents of West Bengal. **Methods**: A cross-sectional, observational study was conducted with 24 patients diagnosed with cholangiocarcinoma in tertiary care hospitals across urban West Bengal. Demographic data and clinical risk factors were collected via structured interviews and medical records. Statistical analysis was conducted to determine the most common associated factors. **Results**: Out of the 24 cases studied, a male predominance was observed (62.5%). The mean age of presentation was 58.6 years. The most common risk factors were chronic liver disease (54.1%), parasitic infections (29.1%), primary sclerosing cholangitis (20.8%), and hepatolithiasis (16.6%). **Conclusion**: The findings highlight a growing burden of cholangiocarcinoma in urban West Bengal, with multiple identifiable risk factors, many of which are preventable or manageable. This underscores the need for improved surveillance, early diagnosis, and public health interventions targeting modifiable risk factors.

KEYWORDS: Cholangiocarcinoma (CCA), malignancy.

INTRODUCTION

Cholangiocarcinoma (CCA) represents a group of malignancies originating from the epithelial lining of the bile ducts. While it remains relatively rare globally, the incidence is increasing in certain parts of the world due to the rising prevalence of chronic liver diseases, metabolic syndromes, and environmental exposures. Cholangiocarcinoma (CCA), or bile duct cancer, is a relatively rare cancer with a prevalence that varies significantly by geographic location and type of CCA. In Western countries, it's estimated to affect 0.5 to 2 people per 100,000 annually[1]. However, rates are much higher in Southeast Asia, particularly in regions where liver flukes are common. Intrahepatic CCA (iCCA) incidence has been increasing in Western countries, possibly due to improved diagnostic methods and rising rates of risk factors like diabetes and obesity[2].

Here's a more detailed breakdown: Global Variations: Highest Incidence: The highest incidence rates of CCA are found in East Asia, particularly in parts of Thailand, with rates as high as 85 cases per 100,000 in Northeast Thailand. Lower Incidence in the West: In Western countries, the overall incidence of CCA is lower, typically between 0.5 and 3.4 cases per 100,000. Increasing Incidence in the West: While overall CCA incidence remains lower in Western countries, there has been a notable increase in iCCA cases in recent decades, potentially linked to rising rates of diabetes, obesity, and non-alcoholic steatohepatitis (NASH)[3].

Geographic Differences Explained by Risk Factors: The wide variation in CCA incidence across the globe is largely attributed to the prevalence of specific risk factors in different regions, such as liver flukes in Southeast Asia and metabolic conditions like diabetes and obesity in the West. Intrahepatic vs. Extrahepatic CCA: Intrahepatic CCA (iCCA): Arises within the liver's bile ducts[4]. It is the most common type of CCA found in Western countries and its incidence is increasing. Extrahepatic CCA (eCCA) Arises outside the liver's bile ducts. While also rare, the incidence of eCCA is generally stable or declining in some Western countries. Other Factors: Age: CCA incidence increases with age, with most cases diagnosed between the ages of 50 and 70 years. Sex: CCA is slightly more common in males than in females[5].

Survival Rates: CCA is a very aggressive cancer with poor survival rates, especially when diagnosed at advanced stages. In summary, while CCA is a relatively rare cancer, its prevalence and incidence vary significantly by geographic location and type (iCCA vs. eCCA). Understanding these variations and the associated risk factors is crucial for effective prevention and treatment strategies

In India, particularly in urban settings such as those in West Bengal, lifestyle changes, increasing rates of hepatobiliary infections, and poor sanitation may contribute to the disease burden. Despite its low incidence, cholangiocarcinoma is often diagnosed at an advanced stage due to non-specific symptoms, leading to a poor prognosis[6].

This study explores the demographic and clinical risk factors contributing to CCA among the urban population in West Bengal to inform future strategies for prevention and early diagnosis.

METHODS

This study was conducted in a tertiary hospital. After obtaining institutional ethical committee approval. It was Cross-sectional observational study conducted on 30 patients in the department of Obstetrics and gynaecology at a tertiary care centre, from September/ 2021 to March/2022.

Total 30 participant were approached to project among 6 were excluded in this study and Total 24 Confirmed cases were included on the basis of fulfilling of the eligibility criteria.

The institute Ethics Committee approval was obtained before starting the sample collection. A written and informed consent was taken from the patient regarding the study in his/her vernacular language and English. In this study Patients were subjected to: A detailed history of sign & symptoms and its duration. Detailed history of systemic diseases and its duration, medication were noted. Patients were subjected to General physical examination.

Flowchart of Study Design

Urban Tertiary Hospital Selection (n=30)
↓
Patient Screening (with diagnosis of Cholangiocarcinoma)
↓
Eligible Participants Identified (n=24)
↓
Data Collection: Demographic + Risk Factors
↓
Data Analysis and Interpretation

↓

Findings and Report Compilation

Statistics and analysis of data

Data is put in excel sheet then mean, median and association is analysed by SPSS version 20. Chi-square test was used as test of significance for qualitative data. Continuous data was represented as mean and SD. MS Excel and MS word was used to obtain various types of graphs such as bar diagram. P value (Probability that the result is true) of Pvaue <0.05 was considered as statistically significant after assuming all the rules of statistical tests. Statistical software: MS Excel, SPSS version 22 (IBM SPSS Statistics, Somers NY, USA) was used to analyse data. Sample size is calculated by N master statistical software

RESULTS

In this study we found that Cholangiocarcinoma (CCA is associated with demographic profile of patient. Male were more prone to suffered of Cholangiocarcinoma (CCA) as compared to Female, its prevalence 62.5%. Cholangiocarcinoma (CCA) was associated to Industrial Worker (Table 1).

Age is also associated factors for Cholangiocarcinoma (CCA). Prevalence of Cholangiocarcinoma is more in 50–59 years age group(Table 1). Cholangiocarcinoma (CCA is more predominance among middle class, It mean it is causing factor for it, its prevalence 54.1%.

Demographic Profile Table 1

Demographic Variable	**Frequency (n=24)**	**Percentage (%)**
Age Group (in years)		
40–49	3	12.5%
50–59	9	37.5%
60–69	8	33.3%
70 and above	4	16.6%
Gender		
Male	15	62.5%
Female	9	37.5%
Occupation		
Industrial Worker	5	20.8%
Service	6	25.0%
Homemaker	8	33.3%
Retired	5	20.8%
Socioeconomic Status		
Upper	4	16.6%
Middle	13	54.1%
Lower	7	29.1%

Risk Factor for Cholangiocarcinoma (CCA) are Chronic liver disease (HBV/HCV/alcohol), Parasitic infection (e.g., liver flukes), Primary sclerosing cholangitis (PSC), Hepatolithiasis, Congenital biliary abnormalities, Diabetes Mellitus, and Obesity

Smoking (Table 2).

Risk Factors Table 2

Risk Factor	Frequency (n=24)	Percentage (%)
Chronic liver disease (HBV/HCV/alcohol)	13	54.1%
Parasitic infection (e.g., liver flukes)	7	29.1%
Primary sclerosing cholangitis (PSC)	5	20.8%
Hepatolithiasis	4	16.6%
Congenital biliary abnormalities	3	12.5%
Diabetes Mellitus	6	25.0%
Obesity	5	20.8%
Smoking	8	33.3%
Exposure to industrial chemicals	5	20.8%

- **Age and Gender:** The highest incidence was in the age group of 50–69 years. Males were more commonly affected than females.
- **Common Risk Factors:** Chronic liver disease was the most common risk factor, followed by parasitic infection, diabetes, and exposure to chemicals.
- **Occupation Link:** Industrial workers and those with chemical exposures showed a moderate association.
- **Lifestyle Factors:** Smoking and obesity were also notable contributors.

DISCUSSION

The study indicates that cholangiocarcinoma is emerging as a notable health concern among the urban population of West Bengal, especially among males in the 50–69 age group. The predominance of chronic liver disease and parasitic infections aligns with previously documented global trends. However, the urban setting presents additional risk factors such as chemical exposure and lifestyle-related conditions like obesity and diabetes[7-11].

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Cholangiocarcinoma, or bile duct cancer, has several established risk factors, including parasitic infections (like liver flukes), primary sclerosing cholangitis, biliary duct cysts, hepatolithiasis, and exposure to certain chemicals. Additionally, conditions like cirrhosis, hepatitis B and C infections, inflammatory bowel disease, diabetes, obesity, alcohol abuse, and smoking have been identified as potential risk factors[12-17].

Established Risk Factors: Parasitic Infections: Infestation with liver flukes, particularly Opisthorchis viverrini in Southeast Asia, is a major risk factor for cholangiocarcinoma. Primary Sclerosing Cholangitis (PSC):This chronic inflammatory disease of the bile ducts significantly increases the risk of cholangiocarcinoma. Biliary Duct Cysts: Conditions like choledochal cysts and Caroli's disease, which involve abnormal dilations of the bile ducts, are associated with an increased risk[18-21].

Hepatolithiasis: The presence of gallstones within the bile ducts is another recognized risk factor. Chemical Exposure: Exposure to certain chemicals, such as thorotrast (a radioactive contrast agent), asbestos, and radon, has been linked to an increased risk. Potential Risk Factors Liver Cirrhosis: Liver damage and scarring (cirrhosis) from various causes, including alcohol abuse and viral hepatitis, elevate the risk of cholangiocarcinoma. Viral Hepatitis: Infection with hepatitis B or C viruses can increase the risk of developing bile duct cancer. Inflammatory Bowel Disease (IBD): Specifically, ulcerative colitis, an inflammatory condition of the colon, is associated with an increased risk of cholangiocarcinoma. Diabetes: Both type 1 and type 2 diabetes have been linked to a higher risk of cholangiocarcinoma [22]. Obesity and Alcohol: While the evidence is not conclusive, obesity and alcohol consumption are also considered potential risk factors.
Smoking: Smoking has been associated with an increased risk of cholangiocarcinoma. Genetic Factors: Genetic predispositions can also play a role in some cases. Important Considerations: Individual Risk Varies: The specific risk factors and their relative importance can vary depending on geographic location and other individual characteristics [23-28]. Most Cases Have No Known Risk Factors: A significant percentage of cholangiocarcinoma cases occur in individuals with no identifiable risk factors, highlighting the need for further research into the causes of this cancer. Modifiable Risk Factors: Strategies to reduce risk include moderation or avoidance of alcohol, managing diabetes, maintaining a healthy weight, and avoiding smoking [29].
Limitations of the study include the small sample size and the lack of longitudinal follow-up. Still, the data emphasize the need for proactive risk factor modification, screening programs, and increased awareness among both clinicians and the public

CONCLUSION

Cholangiocarcinoma, though rare, is increasingly prevalent among urban populations in West Bengal. Several modifiable and non-modifiable risk factors contribute to its development. Early identification of these factors, along with appropriate screening and preventive measures, can play a pivotal role in reducing the disease burden and improving outcomes

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CONFLICT OF INTEREST

The authors report no conflicts of interest

SUBMISSION DECLARATION

This submission has not been published anywhere previously and that it is not simultaneously being considered for any other journal.

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