Original Article

An Epidemiological Study to Define Relationship between Abdominal Surgical Emergencies and Alcohol Intake in 18–40 years Age Group in Population of Indore

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Abstract

Background: Alcohol affects multiple organ systems in human body, most commonly the gastrointestinal (GI) tract causing multiple diseases such as peptic ulcer diseases, perforation, pancreatic diseases, and multiple GI cancers. The objectives of the study were to define the relation of alcohol consumption and its pattern with chronic pancreatitis and pre-pyloric perforation, to study the socioeconomic and demographic distribution of alcohol consumption and the disease.

Materials and Methods: A total of 100 patients, 50 each of chronic pancreatitis and pre-pyloric perforation, were enrolled in the study over a period of 2 years. A detailed history about alcohol consumption, sociodemographic, and socioeconomic status of the patient is taken and is correlated with the disease.

Results: For chronic pancreatitis, about 84% of patients were male with highest incidence noted in 36–40 years age group (mean age – 34.16 years). Most of the patients were illiterate (36%) and belonged to low economic strata. Majority were alcoholic (80%), mean duration of alcohol consumption of 12.75 years with average frequency of alcohol consumption of 4.9 times per week, and 5.6 standard units of alcohol consumed per drinking episode. For pre-pyloric perforation, about 88% of patients were male with highest incidence noted in 36–40 years age group (mean age – 32.76 years). Most of the patients were illiterate (32%) and belonged to low economic strata. Majority were alcoholic (84%), mean duration of alcohol consumption of 10.45 years with average frequency of alcohol consumption of 4.46 times per week, and 4.8 standard units consumed per drinking episode.

Conclusion: Both the diseases, chronic pancreatitis and pre-pyloric perforation are related to alcohol consumption. Age of the patient, sex, their literacy level, and their socioeconomic status also have a significant relation with alcohol consumption and the disease outcome.

Key word: Alcohol, Chronic pancreatitis, Pre-pyloric perforation

INTRODUCTION

Alcoholism is one of the biggest social evil of the 21st century. Alcohol addiction is not only threat to the person but also to his family, coworkers, and the society. With the increasing globalization, improving financial condition of the society and easy access to cheap alcohol, young Indian population has seen an increased incidence of alcohol consumption even among the rural population in the recent times. It is not only an economic burden to their family but also affect their health in a deleterious manner. Alcohol affects multiple organ systems in human body, most commonly the gastrointestinal (GI) tract. There are number of diseases that have been found to have an established relation with alcohol to name a few; peptic ulcer diseases, perforation, pancreatic diseases, and multiple GI cancers.

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In this study, we have covered two of the common pathologies of GI tract associated with alcohol consumption, that is, pre-pyloric perforation and chronic pancreatitis. We have tried to strengthen the relation between alcohol consumption pattern and the disease. Alcohol abuse disorder can be assessed by clinical interview and several rating scale such as CAGE criteria or Alcohol Use Disorders Identification Test (AUDIT). We have used AUDIT score for defining the chronicity of alcoholism in our study.

The AUDIT is a 10-item screening tool developed by the World Health Organization used to assess alcohol consumption, drinking behaviors, and alcohol-related problems.

Each response is graded from 0 to 4 to assess the severity of alcoholism. As the score increases, dependency over alcohol and its adverse effects on the person also increases. Person with scores between 8 and 15 are most appropriate for simple advice focused on the reduction of hazardous drinking, between 16 and 19 suggest brief counseling and continued monitoring, and AUDIT scores of 20 or above clearly require further diagnostic evaluation for alcohol dependence.

At the end of this study, we would like to see the relation of alcohol consumption with that of the disease, and other factors such as age, gender, educational, and occupational status.

MATERIALS AND METHODS

This was an observational study conducted at M.Y. Hospital and M.G.M Medical College, Indore, Madhya Pradesh, during 2019–2020. A total of 100 patients of 18–40 years age group from various socioeconomic, cultural, and economic backgrounds were included in this study that included 50 patients suffering from chronic pancreatitis and 50 suffering from pre-pyloric perforation. Patient clinically diagnosed with perforation or pancreatitis was confirmed with necessary radiological investigations such as ultrasonography abdomen, X-ray abdomen and chest, computed tomography abdomen, and magnetic resonance cholangiopancreatography. A detailed history regarding their age, literacy level, history of alcoholism along with pattern, frequency, quantity, and type of alcohol intake was documented in a preformed questionnaire after proper informed consent. History related to other risk factors of GI perforation and pancreatitis was also documented which included smoking history, medical history along with family medical history, and history related to other drug abuses. Patient's sociodemographic data were collected which included age, sex, marital status, occupation, education level, and family income, all the data were processed to define the relation between alcohol intake and the diseases and various factors associated to it.

RESULTS

This was an observational study consisting of 100 cases 50 each of chronic pancreatitis and prepyloric perforation.

The results of the study are tabulated on the basis of age [Table 1], sex [Table 2], monthly income [Table 3], literacy level [Table 4], alcohol intake [Table 5], duration of alcohol consumption [Table 6], number of standard unit alcohol consumed per drinking episode [Table 7], and frequency of alcohol consumption [Table 8].

DISCUSSION

Chronic Pancreatitis [Table 9]
Age distribution
This study had maximum number of patients in 36–40 years age group (46%) with mean age at presentation as 34.16 years. Nandu *et al.*[1] had mean age of 38.94 years, Nagesh *et al.*[2] had 38.10 years, Kurrey *et al.*[3] had 36.18 years, Balakrishnan *et al.*[4] had 39.7 years, and Dani *et al.*[5] had mean age of 40.8 years.

Sex distribution
This study had majority of the male patients (84%) as compared to females (16%). Nandu *et al.*[1] had 92.25% of males, Nagesh *et al.*[2] had 88.7% of males, Kurrey *et al.*[3] had 66% of males, Balakrishnan *et al.*[4] had 71% of males, Dani *et al.*[5] had 91.5% of males, Beninca *et al.*[6] had all male patients only, and Atsushi *et al.*[7] had 90.8% of males.

Distribution on the basis of income or occupation
This study had majority of the patients belonged to lower income society with 56% having income <Rs. 10,000/month and 84% having income <Rs. 20,000/month. Nandu *et al.*[1] had 70.42% laborers and unskilled workers, Kurrey *et al.*[3] also found that the disease was more common in laborers and unskilled workers. Balakrishnan *et al.*[4] also found that 33.8% of patients belonged to lower class while 58.1% were middle class and only 8.1% of the sample population belonged to upper class.

Distribution based on literacy level
In this study, 76% of patients either were illiterate or had primary education.

Beninca *et al.*[6] had 72.1% of people who had only elementary education or primary education and only 9.3% had higher education.

Distribution based on alcohol intake
This study had 80% of the cases who consumed alcohol. Nandu *et al.*[1] had 78.17% alcoholics, Nagesh *et al.*[2] had 81.1% alcoholics, Kurrey *et al.*[3] had 58% alcoholics, Balakrishnan *et al.*[4] had only 38.7% alcoholics, and Dani *et al.*[5] had 86% alcoholics.

Distribution based on duration of alcohol consumption
In this study, it was observed that average duration the alcohol consumption was 12.75 years with 35% having more than 20 years and 87.5% having more than 10 years. Dani *et al.*[5] had an average of 20.8 years, Beninca *et al.*[6] had 23.23 years, and Atsushi *et al.*[7] had 23.0 years of alcohol consumption in females whereas 34.1 years in males.

Distribution based on number of standard units of alcohol consumed per drinking episode
This study found that average alcohol consumption per drinking episode was 5.6 standard units/episode roughly

corresponding to 78.4 g alcohol per episode (considering 1 standard drink, 30 ml of distilled spirit of 40% strength containing 14 g of pure alcohol). Dani *et al.*[5] had an average daily alcohol consumption of 396 g of alcohol, Beninca *et al.*[6] had 247.23 g, and Atsushi *et al.*[7] had an average daily alcohol consumption as 96.8 g for males and 85.9 g for females.

Distribution based on frequency of alcohol consumption
In this study, we observed that average frequency of alcohol consumption is 4.9 times a week with 45% consuming

Table 1: Age distribution

Age group (year)	Chronic pancreatitis (%)	Pre-pyloric perforation (%)
18–25	4 (8)	6 (12)
26–30	6 (12)	10 (20)
31–35	17 (34)	15 (30)
36–40	23 (46)	19 (38)
Total	50 (100)	50 (100)
Mean age	34.16 years	32.76 years

Table 2: Sex distribution

Sex	Chronic pancreatitis (%)	Pre-pyloric perforation (%)
Female	8 (16)	6 (12)
Male	42 (84)	44 (88)
Total	50 (100)	50 (100)

Table 3: Distribution on the basis of income

Monthly income (in Rs.)	Chronic pancreatitis (%)	Pre-pyloric perforation (%)
<10,000	28 (56)	26 (52)
10,000–20,000	14 (28)	19 (38)
20,000–30,000	8 (16)	5 (10)
Total	50 (100)	50 (100)

Table 4: Distribution based on literacy level

Education	Chronic pancreatitis (%)	Pre-pyloric perforation (%)
Graduate	5 (10)	10 (20)
HSC	4 (8)	5 (10)
SSC	8 (16)	3 (6)
Primary	15 (30)	16 (32)
Illiterate	18 (36)	16 (32)
Total	50 (100)	50 (100)

Table 5: Distribution based on alcohol intake

Alcohol intake	Chronic pancreatitis (%)	Pre-pyloric perforation (%)
No	10 (20)	8 (16)
Yes	40 (80)	42 (84)
Total	50 (100)	50 (100)

Table 6: Distribution based on duration of alcohol consumption

Duration of alcohol consumption (year)	Chronic pancreatitis (%)	Pre-pyloric perforation (%)
0–10	5 (12.5)	19 (45.2)
11–20	21 (52.5)	17 (40.5)
21–30	14 (35)	6 (14.3)
Total	40 (100)	42 (100)
Average duration of alcohol consumption	12.75 years	10.45 years

Table 7: Distribution based on number of standard units of alcohol consumed per drinking episode

Standard units consumed/episode	Chronic pancreatitis (%)	Pre-pyloric perforation (%)
1–2	4 (10)	6 (14.3)
3–4	11 (27.5)	13 (31)
5–6	8 (20)	14 (33.3)
7–9	17 (42.5)	9 (21.4)
Total	40 (100)	42 (100)
Average alcohol consumed per drinking episode	5.6 standard units/episode	4.8 standard units/episode

Table 8: Distribution based on frequency of alcohol consumption

Frequency (per week)	Chronic pancreatitis (%)	Pre-pyloric perforation (%)
<1	4 (10)	6 (14.3)
2–3	11 (27.5)	13 (31)
4–6	7 (17.5)	8 (19)
Daily	18 (45)	15 (35.7)
Total	40 (100)	42 (100)
Average frequency of consumption per week	4.9 times per week	4.46 times per week

Table 9: Chronic pancreatitis comparisons

	Present study	Nandu *et al.*[1]	Nagesh *et al.*[2]	Kurrey *et al.*[3]	Balakrishnan *et al.*[4]	Renato Dani *et al.*[5]	Beninca *et al.*[6]	Masamune Atsushi *et al.*[7]
Mean age of presentation	34.16	38.94	38.10	36.18	39.7	40.8	-	-
Males (%)	84	92.25	88.7	66	71	91.5	100	90.8
Education (till primary standard)	76	-	-	-	-	-	72.1	-
Alcohol consumption	80	78.17	81.1	58	38.7	86	-	-
Average years of alcohol consumption	12.75	-	-	-	-	20.8	23.23	23
Alcohol consumption per episode (in g)	78.4	-	-	-	-	396	247.23	96.8 (males) 85.9 (females)
Frequency per week	4.9	-	-	-	-	-	-	Almost daily

Table 10: Pre-pyloric perforation comparisons

	Present study	Koto Kamsir *et al.*[8]	Dakubo *et al.*[9]	Jahagirdaar *et al.*[12]	Yang *et al.*[10]	Patil *et al.*[13]	Shah *et al.*[11]
Mean age of presentation	32.76	45.46	40.9	-	50.6	-	46.6
Males (%)	88	74.2	81.9	-	85	86.95	80
Education (till primary standard)	64	-	-	-	-	67.38	-
Alcohol consumption	84	54.3	-	-	47.2	73.91	-

alcohol daily. Atsushi *et al.*[7] found that majority of the study population consumed alcohol almost every day.

Pre-pyloric Perforation [Table 10]
Age distribution
This study had maximum number of patients in 36–40 years age group (38%) with mean age at presentation as 32.76 years. Kamsir *et al.*[8] had mean age of presentation of 45.46 years. Dakubo *et al.*[9] had 40.9 years, Yang *et al.*[10] had 50.6 years, and Shah *et al.*[11] had mean age of 46.6 years. Jahagirdaar *et al.*[12] had maximum number of patients in 36–40 years age group (31.5%). Patil *et al.*[13] had maximum number of patients in 41–50 years age group (36.9%).

Sex distribution
This study had majority of male patients (88%) as compared to females (12%). Kamsir *et al.*[8] had 74.2% of males, Dakubo *et al.*[9] had 81.9% of males, Jahagirdaar *et al.*[12] had 56 males as compared to only one female, Yang *et al.*[10] had 85% of males, Patil *et al.*[13] had 86.95% of males, and Shah *et al.*[11] had 80% of males.

Distribution on the basis of income or occupation
This study had majority of the patients belonged to lower income society with 52% having income <Rs. 10,000/month and 90% having income <Rs. 20,000/month. Dakubo *et al.*[9] found disease more commonly in lower socioeconomic strata (55.3%). Patil *et al.*[13] had 73.91% of farmers.

Distribution based on literacy level
This study found that 64% of patients either were illiterate or had primary education. Patil *et al.*[13] had 67.38% study population who were either illiterate or had primary education.

Distribution based on alcohol intake
This study had 84% alcoholics whereas Kamsir *et al.*[9] found 54.3% as alcoholics, Yang *et al.*[10] had 47.2% as alcoholics, and Patil *et al.*[13] had 73.91% of the study population consuming alcohol.

CONCLUSION

From our study, we can conclude that both the diseases, chronic pancreatitis, and pre-pyloric perforation are related to alcohol consumption.
- Alcohol consumption has a significant impact on the disease outcome.
- Total years of alcohol consumed, frequency of consumption, and binge drinking have an adverse effect on the disease outcome. However, no linear relation between them and the disease can be identified.

Age of the patient, sex, their literacy level, and their socioeconomic status also have a significant relation with alcohol consumption and the disease outcome.
- In our study, we included people from 18 to 40 years age group (productive age group) and had majority of the study population as males.

We can conclude from our study that more number of people are getting exposed to alcohol at an early age and are contracting the disease earlier than before.

The male population is most affected by this. This can also be seen in our study with only three out of 82 alcoholics being females. Males are seen to consume alcohol in greater amount, more frequently and binge drinking is more common in them as compared to females which also precipitates the problem.

- People belonging to lower socioeconomic strata and with low education level often are undernourished and are prone to alcohol addiction. Majority of our study population belonged to this group which consumes the country made liquor which is cheap and often consumed in larger quantity and frequency affecting individual's health.

Multiple other factors play role in the disease pathogenesis. These can be modifiable (like diabetes and smoking) and non-modifiable (like genetic conditions).

- Out of these, smoking is one of the most important risk factor. Alcohol consumption and smoking go simultaneously. Both of these affect the pathogenesis of the disease individually and also have a synergistic effect on the disease pathogenesis.

Our study consisted of 50 patients each of chronic pancreatitis and pre-pyloric perforation and we found a significant relation between alcohol consumption and the disease, pattern of alcohol consumption and the disease, and a significant sociodemographic distribution of the disease in our study population.

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