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RESEARCH ARTICLE

PREVALENCE OF PANCREATITIS IN ALCOHOL DEPENDENCE SYNDROME CASES IN A TERTIARY CARE HOSPITAL IN INDIA.

Vinay S Chauhan[1] and Prateek Yadav[2].

1. Assoc Prof(Psy), AFMC Pune, India.
2. Classified Spl Psychiatry, 151 Base Hospital, India.

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Abstract

Background : pancreatitis is a painful, potentially fatal condition. About 1/3rd of acute pancreatitis cases in united-states are alcohol induced and 60%-90% have a history of chronic consumption. Many cases of alcoholic pancreatitis do not receive psychiatric intervention for their basic etiology and continue with recurrences. There is further dearth of data in indian context.
Aim : was to find out the prevalence and risk factors for pancreatitis in alcohol dependence syndrome(ads).
Method: a prospective study of newly diagnosed patients of ads, admitted in tertiary care hospital from jan to dec 2016, was carried out. Socio-demographic data, quantity and duration of alcohol consumption, co-morbid nicotine dependence were tabulated. Pancreatitis was diagnosed on basis of icd-10, k-85 criteria.
Results:total of 140 cases of ads were admitted during the period. 26 cases(18.58 %) were having pancreatitis. Among pancreatitis group, most had 6-10 years(73.1%) of drinking and were drinking about 80gm/day(50%). 76.9% among pancreatitis group had nicotine dependence. Serum bilirubin, mcv, ast, alt & ggt were raised in 23.1%,57.7%,46.2%,42.3% and 96.2% respectively. The difference between pancreatitis and non pancreatitis group were statistically significant (p=0.001) for co-morbid nicotine dependence syndrome and for mcv (p=0.26). Rest variables did not show significance. Important finding was that 18.58% of ads patients were having pancreatitis.
Conclusion:timely intervention in these could prevent future recurrences and thus it is imperative that attention to the root cause of the condition, alcohol is paid rather than just responding to its effects.

Introduction:-

The World Health Organization (WHO) estimates that there are about 2 billion people worldwide who consume alcoholic beverages and 76.3 million with diagnosable alcohol use disorders.(1) The 2010 analysis of 67 risk factors and risk factor clusters for death and disability found that alcohol consumption was the third leading risk factor for death and disability accounting for 5.5% of disability-adjusted life years (DALYs) lost globally.(2) Overall, there is a causal relationship between alcohol consumption and more than sixty types of disease and injury. In India, alcohol consumption is one among the top ten risk factors and attributable to nearly 3% of DALYs lost.(3) One of the

Corresponding Author:- Dr. Prateek Yadav.
Address:- Classified Spl Psychiatry, 151 Base Hospital, India.

important digestive organs adversely affected by alcohol abuse is the pancreas which was recognized as early as 1878 by Freidreich who wrote 'I am inclined to believe that a general chronic interstitial pancreatitis may result from excessive alcoholism (drunkard's pancreas)'.(4) While Freidreich's observation referred to the association with chronic pancreatic injury, it is now widely acknowledged that the clinical spectrum of alcohol induced pancreatic injury ranges from isolated acute episodes to repeated acute attacks and finally to chronic manifestations. Alcohol induced pancreatitis, is potentially fatal and the course may be short with acute manifestations or long term (chronic). (5, 6)

Alcohol as an etiology has not been quantified however experts define consumption of over 50-80g (4-7 drinks/day) with or without a minimum drinking duration (7,8). An international consensus defined alcoholic chronic pancreatitis based on typical clinical history, threshold alcohol consumption (80 g or more of alcohol for a few years in males and less in females) and morphological evidence of chronic pancreatitis on imaging studies or histology(9). A meta-analysis found a monotonic and approximately exponential dose-response relationship between average volume of alcohol consumption and pancreatitis (10). Another meta-analysis analyzed all studies published between 1980 and 2008 and concluded that the threshold between alcohol consumption and pancreatitis is 4 drinks daily (11). About 70% of pancreatitis cases are believed to be attributable to chronic, heavy alcohol consumption but this percentage differs between countries (12).

Prolonged consumption for 5–10 years typically precedes the initial attack and risk increases with the amount, which suggests a direct toxic effect of alcohol. By causing oxidative stress in the gland; and promoting the synthesis of pancreatic digestive enzymes and destabilizing intracellular membranes, the gland is predisposed toautodigestion.(13,14,15,16)

Major observation that has driven research is that only few alcoholics develop pancreatitis. This suggests the presence of specific susceptibility or trigger factors. However, no single, clear-cut susceptibility factor has yet been identified.(17) The role of smoking is controversial, although researchers agree that this is a major cause through the development of aero-digestive tract cancers and cardiovascular disease.(18) There are hardly any Indian studies on ascertaining the prevalence of Pancreatitis in ADS cases and probable risk factors in these patients. Hence the present study was conducted with the aim to find out the prevalence and risk factors for pancreatitis in ADS and to quantify alcohol as causal factor.

Materials and Methods:-

This was a prospective study carried out in a tertiary care hospital. All patients referred for alcohol use disorder during Jan 2016 to Dec 2016 were studied. They were diagnosed with ADS or Nicotine Dependence Syndrome as per ICD-10-DCR criteria. The relevant information was tabulated. Pancreatitis was diagnosed on the basis of ICD-10, K-85 criteria. Serum bilirubin, MCV, AST, ALT and GGT were considered to be raised for value more than 1.0 mg/dl, 96 fl, 45 IU/L, 45 IU/L and 85 IU/L respectively.

Acute Pancreatitis(ICD-10-K-85) Diagnosis requires 2 of the 3 following criteria:Characteristic acute onset of epigastric or vague abdominal pain that may radiate to the back, Serum amylase or lipase levels $\geq$ 3 times the upper limit of normal and imaging study with characteristic changes. CT, MRI, abdominal ultrasound or endoscopic ultrasound can be used for diagnosis

Since the main aim was to find out prevalence and risk factors for alcoholic pancreatitis; patients having pancreatitis with ADS were studied in detail. All subject participants were male patients as the hospital caters largely for male population. Statistical analysis was done using SPSS version 21.

Results:-

A total of 140 cases were diagnosed as cases of ADS during Jan 2016 to Dec 2016. The mean age was 36.13 years. Table 1 depicts demographic characteristics of the study participants. 18.5% of ADS cases were found to have acute pancreatitis during the study period. Total of 34 male cases of acute Pancreatitis were admitted in this hospital during above period. 26 (76%) cases were found to have ADS (included in the 140 cases of ADS of study group) and 08(24%) were diagnosed to be idiopathic pancreatitis. 09 patients came under psychiatric attention on their second admission as relapse of acute pancreatitis.

Distribution of ADS patients who suffered from Acute Pancreatitis as per age group, monthly income, education and occupation depicted in Table-2. The maximum number of ADS patients who suffered from Acute Pancreatitis was in age group 30-39 years (65.4%), income group 20,000-29,999 (69%), education up to high school (50%) and semiskilled & unskilled workers (73%). However, none of the variables (age, income, education and occupation) showed statistically significant linear trend (p= 0.66, 0.17, 0.73 and 0.81 respectively).

Table 3 depicts various parameters studied between Pancreatitis and Non pancreatitis group among the study participants of ADS patients. The mean duration of drinking was 9.77years and mean quantity of drinking was 83 gms/day considering 140 study participants. The maximum number among pancreatitis group had 6-10 years (73.1%) of drinking and were drinking about 80 gms /day(50%). 76.9% among pancreatitis group had nicotine dependence syndrome. The difference between Pancreatitis and Non pancreatitis group were statistically significant (p=0.001) for co-morbid nicotine dependence syndrome and for MCV (p=0.026). Rest of the variables did not show statistically significant difference between Pancreatitis and Non Pancreatitis group.

Table1:-Demographic characteristics of study participants

Characteristic	N	%
Age group(years)		
20-29	20	14.3
30-39	85	60.7
40-49	29	20.7
>49	06	4.3
Monthly Income		
<20,000	09	6.4
20,000-24,999	43	30.7
25,000-29,999	60	42.9
≥30,000	28	20.0
Education		
Up to high school	62	44.3
Intermediate	56	40.0
Graduate	22	15.7
Occupation		
Skilled	37	26.4
Semiskilled	61	43.6
Unskilled	42	30.0

Table 2:-Distribution of Alcohol dependence syndrome patients who suffered from Acute Pancreatitis as per age group, monthly income, education and occupation

Characteristic	N	%	p value
Age group (years)			
20-29	03	11.5	0.662
30-39	17	65.4	
40-49	04	15.4	
>49	02	7.7	
Monthly Income			
<20,000	04	15.4	0.172
20,000-24,999	09	34.6	
25,000-29,999	09	34.6	
≥30,000	04	15.4	
Education			
Up to high school	13	50.0	0.737
Intermediate	10	38.5	
Graduate	03	11.5	
Occupation			

Skilled	07	26.4	0.810
Semiskilled	10	38.4	
Unskilled	09	34.6	

Table 3:-Association between Pancreatitis and Non Pancreatitis group of Alcohol dependence syndrome patients

Characteristic	Pancreatitis	Non-Pancreatitis	p value
Duration of drinking (years)			
0-5	01	16	0.152
6-10	19	62	
11-15	04	32	
>15	02	04	
Quantity of drinking (Gms)			
60 gms	04	32	0.477
80 gms	13	45	
100 gms	06	29	
120 gms	03	08	
Nicotine dependence syndrome			
Yes	20	46	0.001**
No	06	68	
MCV			
Raised	15	39	0.026*
Not Raised	11	75	
Serum Bilrubin			
Raised	06	18	0.373
Not Raised	20	96	
AST			
Raised	12	61	0.498
Not Raised	14	53	
ALT			
Raised	11	67	0.127
Not Raised	15	47	
GGT			
Raised	25	108	0.764
Not Raised	01	06	

Discussion:-

Excessive consumption of alcohol is a major cause of acute and chronic pancreatitis in both developed and developing countries. Alcohol has been found as the causative factor of acute mild pancreatitis and severe acute pancreatitis in 41% and 18% respectively, which was more than Gall stones associated pancreatitis.(19) Our study revealed 76% of acute pancreatitis cases were alcohol related, other studies have findings with rates ranging from 70%-89%. (5,20)

Twenty six (18.5%) patients suffered from acute pancreatitis among 140 cases of ADS in the study. This finding has not been replicated probably as most of the studies are carried out by gastroenterologist and mostly in chronic pancreatitis group. This is a highlight of the study particularly in the Indian context and brings forth the high number of people in this group who suffer from this near fatal disorder, in a scenario when more than two-third of the sample either had less than ten yrs of consumption or less than 80gm of consumption each day(mean-9.77 years and mean quantity - 83 gms/day)

Maximum prevalence were among 30-39 yrs age group(65%), who were drinking about 80 gms/day(50%) for 6-10 years(73%), other studies have also documented about same (5,12). This shows that a prolonged exposure is required in majority, for development of pancreatitis, and also probably hints that excessive consumption is not the

only reason as people with more amount and years of drinking than the above reported lesser fraction in the pancreatitis group, although substantiating it is beyond the scope here.

As the results show, the proportion of patients detected to have Pancreatitis increases exponentially if the duration of drinking is more than 5yrs (from 1/16 to almost 1/5) although after that further duration has little impact. Similarly the amount of alcohol consumed has exponential effects if it is more than 60gms per day. (table3).

Smoking also confers a strong, independent and dose-dependent risk of pancreatitis that may be additive or multiplicative when combined with alcohol.(23) Co-morbid Nicotine dependence syndrome was seen in 76.9% of the pancreatitis group and was highly statistically significant, which has been a finding in other studies (21,22).The mechanism by which smoking contributes to pancreatic injury or by which smoking accelerates the pancreatic inflammatory process is still unknown but laboratory studies have found that activation of multiple signal transduction pathways due to nicotine exposure results in high levels of intracellular calcium release and may be responsible for cell cytotoxicity and cell injury.(23)

Other various alcohol related lab parameters were studied for both groups among cases of ADS; the significant statistical association was found with MCV. The MCV has been found to be independently associated with higher alcohol consumption and alcohol related diseases such as esophageal carcinoma, chronic alcoholic pancreatitis, and liver cirrhosis. (24) Thus a higher MCV value is associated with Pancreatitis as it indicates higher alcohol consumption over a prolonged period of time, both of which are indicated in the precipitation of the disease.

The strengths of the study were clinical relevance of pancreatitis association with ADS & portrayal of its prevalence in pancreatitis, sample size, accurate diagnostic criteria and. Further the study also included Acute Pancreatitis patients, which has limited research. The study was limited with all patients being males and absence of control.

The morbidity and mortality of Acute Pancreatitis and the propensity to progress to a chronic course warrant that a preventive strategy is the best management for this disease, however the management of alcoholic pancreatitis is mostly reactive; little is done to prevent disease progression. Measures to reduce alcohol consumption are not even mentioned in many published guidelines for management of alcoholic pancreatitis. There is ample evidence available that abstinence decreases the frequency and severity of attack.(14) It has been found that, at least in the short to medium term, specific interventions and/or counseling measures to reduce alcohol consumption result in a demonstrable reduction in attacks of alcoholic pancreatitis.(25)

Conclusion:-

Therapeutic imperative is that the routine approach to alcoholic pancreatitis is expanded to include measures to emphasize the importance of abstinence and to support the patient in their efforts to minimize their drinking. As such, we envisage that these interventions will be performed not only by the specialist, but perhaps more importantly, by general practitioners, nursing or allied health staff who would be likely to see the patient on a regular basis

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