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### ***Original Article***

#### **Biochemical Findings and outcomes of the treatment of the Patients with pancreatitis admitted in Nobel Medical College Teaching Hospital, Biratnagar, Nepal**

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### **Abstract**

#### **Background**

Pancreatitis is well known for its painful state of illness causing a severe impact on the quality of life which can be followed by life-threatening long-term sequelae of diabetes mellitus and pancreatic cancer as its complications. The present study was conducted to evaluate biochemical findings and outcomes following treatment of ICU admitted patients suffering from pancreatitis in Nobel Medical College Teaching Hospital (NMCTH).

#### **Materials and Methods**

All the patients admitted in the ICU of NMCTH from 15<sup>th</sup> January 2017 to 14<sup>th</sup> January 2018 having been diagnosed as suffering from pancreatitis were enrolled in this study. Age, sex, differential diagnosis, blood amylase, lipase level and outcomes of the treatment of the patients were measured as major variables. Blood amylase and lipase level of these patients were estimated in the department of Biochemistry, NMCTH by the standard protocols using Randox kits, provided by the manufacturer. The study was carried out after getting the approval from Institutional review committee (IRC). Statistical significance was compared using Student's two-tailed t-test. Results were considered significant if  $p \leq 0.05$ .

#### **Results**

The number of patients admitted in ICU and suffering from pancreatitis was 136 out of 2204 total admission in ICU within a period of 1 year. Out of 136 pancreatitis patients, 44 were of biliary pancreatitis, 40 of alcoholic and 52 were patients of pancreatitis suffered from some other unknown factors. The mean age of the patients was  $41.5 \pm 14.2$  year. While analyzing the pancreatitis cases gender wise, it was found that male (N=80) were more sufferers than females (N=56). The mean  $\pm$ SD value of blood amylase and lipase of these patients with pancreatitis were  $1040 \pm 1062$  IU/L &  $442 \pm 425$  IU/L respectively, which was significantly higher than the normal range. The maximum numbers of pancreatitis cases were seen in age group (30-39), (44 patients). It was found in our study that male patients were more sufferers of alcoholic pancreatitis than females; where as female patients were more in number among patients with biliary pancreatitis than males. The patients after getting the proper line of treatment, 88 of them recovered completely without any complication, 38 patients developed some complication, in which 26 got recovered fully and 12 were referred. Mortality was seen in 10 patients.

#### **Conclusion**

The results shows a very high prevalence rate of pancreatitis, the highest number being shared by those suffering from unknown factors followed by biliary pancreatitis and

alcoholic pancreatitis in the descending order. In biliary pancreatitis, female patients are more whereas, the males are taking the major share among alcoholic pancreatitis. The level of the marker enzymes (amylase & lipase) are significantly higher than the normal confirming the cases to be of pancreatitis. Out of 136 patients, except for 12 cases referred and 10 patients died, all are fully recovered and discharged.

**Key Words:** *Pancreatitis, Amylase, Lipase*

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## **Introduction**

Pancreatitis is the inflammatory disease of pancreas. The most frequent gastrointestinal cause for getting admitted into hospital is acute pancreatitis. The incidence of pancreatitis is increasing day by day. The annual global rate of incidence of pancreatitis is 13-45 per 1,00,000 person [1-2]. Elevation of pancreatic enzymes in the blood and abrupt onslaught of abdominal pain are the clinical characteristics of the disease [3]. The overall mortality rate of acute pancreatitis is 3.8% [4] whereas for severe acute pancreatitis, the rate may go upto 20% [5]. Pancreatitis occurs due to different reasons like gallstones, alcohol consumption, cigarette smoking, elevated triglyceride, drug induced etc. The most common cause of acute pancreatitis is found to be due to gallstones worldwide. Gall stones, are made up of either cholesterol or other bile component in the gall bladder, which obstruct pancreatic duct causing pancreatitis. Alcohol abuse induced acute pancreatitis is the next common cause. The toxic and metabolic effects of alcohol on pancreatic acinar cells [6] cause small duct obstruction and hence pancreatitis. The risk of pancreatitis increases with the amount of alcohol consumed. Alcoholic pancreatitis is more likely in middle age population, with a peak incidence at 45-55 years [7]. The present piece of study is aimed at evaluating biochemical findings and final outcome of the treatment of the patients admitted in ICU with pancreatitis.

## **Materials and Methods**

It is a descriptive cross-sectional study which was carried out on all the patients

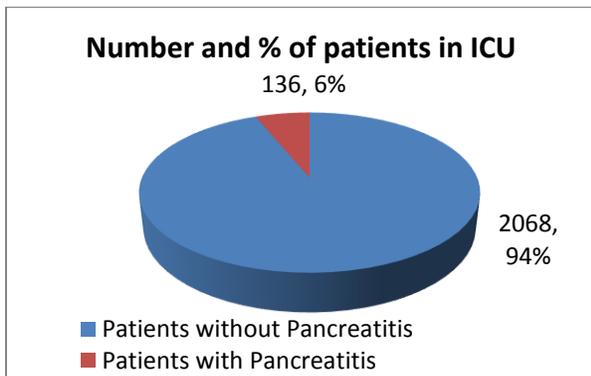
diagnosed as suffering from pancreatitis and admitted in the ICU from 15<sup>th</sup> January 2017 to 14<sup>th</sup> January 2018 of Nobel Medical College Teaching Hospital, Biratnagar, Nepal. The data was collected in standard pro forma and the study variables used were Age, sex, differential diagnosis, blood amylase and lipase level and outcomes of the treatment of the patients. All the patients admitted in ICU suffering from pancreatitis were categorized in three groups i.e. (1) patients suffering from pancreatitis due to obstruction of pancreatic duct by gall stone as biliary pancreatitis, (2) patients suffering from pancreatitis due to alcohol consumption as alcoholic pancreatitis and lastly (3) patients suffering from pancreatitis caused by other reasons like cigarette smoking, elevated TAG, drug induced etc as other pancreatitis. Blood amylase and lipase of the patients suffering from different pancreatitis were assayed by kits available from the manufacturer on Randox analyzer.

The study was carried out after taking the approval from Institutional review committee (IRC) of the institution. The data analysis was done by SPSS software. Mean value and standard deviation were calculated using student's two-tailed t-test. Analysis of the data was performed using student t-test. Results are considered as statistically significant if  $p \leq 0.05$ .

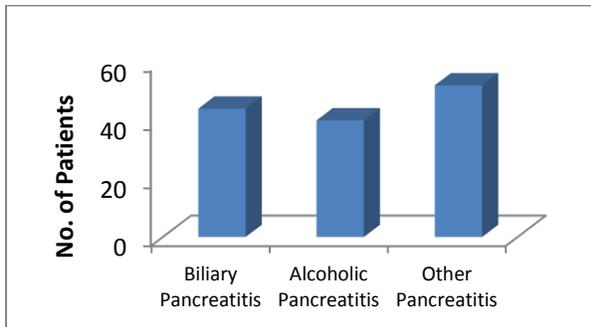
## **Results**

The total number of patients admitted in ICU within a period of 1 year was 2204. Out of this, 136 patients were of pancreatitis as shown in figure 1. While

analyzing the differential diagnosis of the patients suffering with pancreatitis, it was found that there were three types of patients suffering with different types of pancreatitis. Out of 136, 44 patients were of biliary pancreatitis, whereas the number of patients suffering from alcoholic pancreatitis and other pancreatitis caused by other factors were 40 and 52 respectively as shown in figure 2.

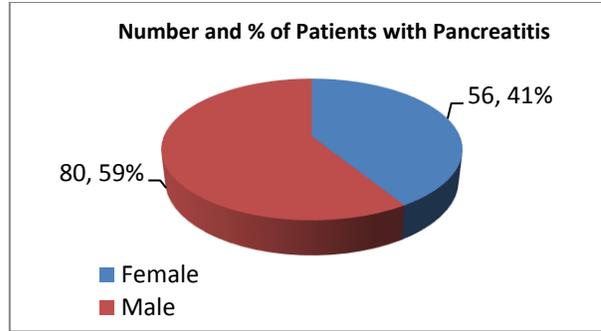


**Figure 1 : The total number and percentage of patients in ICU with and without pancreatitis**



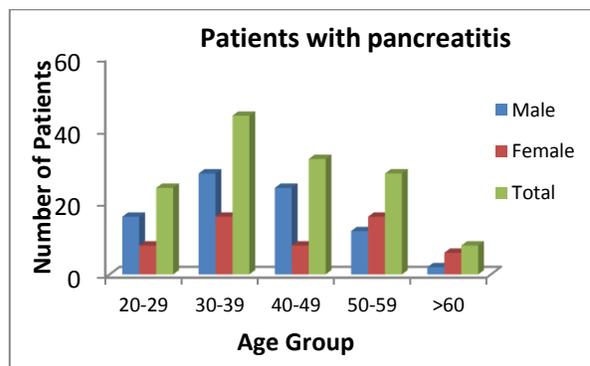
**Figure 2 : Number of patients suffering with different types of pancreatitis**

The mean age of the patients was  $41.5 \pm 14.2$ . We have analyzed our study according to gender and in different age group also. It was seen in our analysis that the total number of male patients suffering from all types of pancreatitis was 80, whereas that of the female patients was 56 as shown in figure 3.



**Figure 3 : Number and percentage of male and female suffering from pancreatitis**

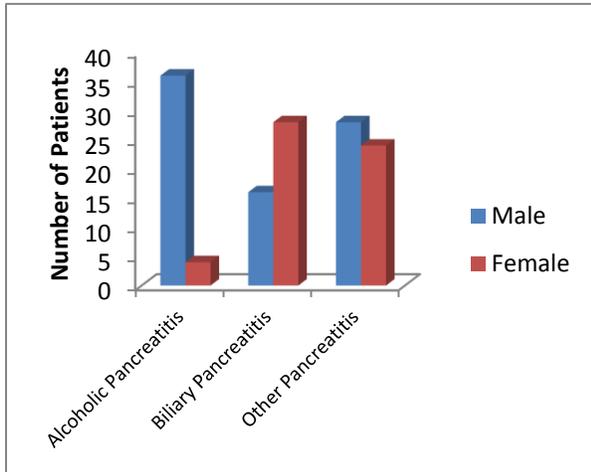
We have categorized the patients suffering with all types of pancreatitis in different age group, i. e. 20-29, 30-39, 40-49, 50-59 and  $\geq 60$ . It was found that the maximum number of patients suffering with pancreatitis were in age group 30-39, which was 44 in number. Similarly, the number of patients with pancreatitis in other age group 20-29, 40-49, 50-59 and  $\geq 60$  were 24, 32, 28 and 8 respectively. The number of male and female patients of pancreatitis (all types combined) in different age group was also found out and is shown in figure 4.



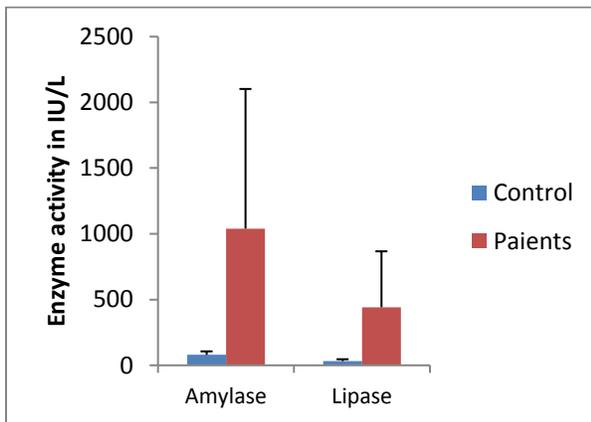
**Figure 4 : Number of male and female patients with pancreatitis in different age group**

While analyzing the number of male and female patients with different types of pancreatitis in our study, it was found that 36 male and 4 female were of alcoholic pancreatitis, 16 male and 28 female patients were with biliary pancreatitis and 28 male and 24 female patients were of

the other pancreatitis as shown in figure 5. The serum amylase and lipase level of the all the patients with pancreatitis were estimated. The Mean  $\pm$  SD value of serum amylase and lipase of all patients with pancreatitis were  $1040 \pm 1062$  IU/L &  $442 \pm 425$  IU/L respectively, which was significantly higher when compared to the control group (figure 6).



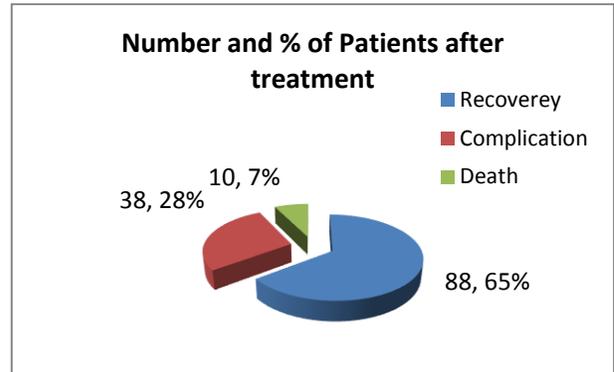
**Figure 5: Number of male and female patients with different types of pancreatitis**



**Figure 6 :Mean  $\pm$  SD value of Serum amylase and lipase of patients with pancreatitis**

The p Value for mean serum amylase and lipase of the patients with pancreatitis were 0.001 & 0.002 respectively, when compared to control group. The outcome of the patients with pancreatitis after getting the treatment was also analyzed. Out of 136, 88 patients recovered

completely without any complication. Some complication was seen in 38 patients, out of which, 26 recovered and 12 were referred to other hospitals for treatment. The last 10 patients could not be recovered and died in the critical care unit.



**Figure 7: Outcome of the treatment of the patients with pancreatitis**

### Discussion

The prevalence rate of pancreatitis in our study is 136 out of 2204 total admission in ICU, which is very high if compared to other studies carried out worldwide. The prevalence picture in United Kingdom, US & Finland were 5.38/100000 and 40.1-80/100000 respectively [8, 9]. One of the previous studies carried out in TUTH, Nepal proposed 28% prevalence rate for acute biliary pancreatitis [10]. For our study, we have categorized the patients in three different group as Alcoholic pancreatitis (AP), Biliary pancreatitis (BP) and pancreatitis from other sources (OP). It was found that biliary pancreatitis cases were more than alcoholic pancreatitis cases in our study. Interestingly, the highest number of pancreatitis were of the other reasons in our study, which can be due to factors like smoking, genetic factors, hypercalcemia, hyperlipidemia, autoimmune, post-necrotic, and duct obstruction (e.g. tumor, inflammatory stricture) [11-12]. Out of 136 patients with pancreatitis, the number of male and

female patients (all type combined) was 80 and 56 respectively. Our finding is slightly different from that of the study carried out in Jamaica, which revealed that out of 91 patients, 70 were females and 21 were males [13]. We have extended our study by analyzing the occurrence of pancreatitis in different age groups and found that the maximum number of patients (both male and female) was in the age group of 30-39 years. One of the studies carried out earlier in TUTH, Nepal in 2012 showed the age group of 40-50 years as the maximum prevalence age group for pancreatitis [10]. In other studies, the mean age of occurrence of pancreatitis is 50-55 and 59 years [14-15]. In the large multicenter North American Pancreatitis study [NAPS2] (2000-2013) in the US, the mean age of the occurrence of pancreatitis was 47 [16]. While analyzing the differential diagnosis of pancreatitis in our study, we found that the maximum sufferers of AP were male patients (36 against 4 of females). Similarly, the maximum number of patients suffering from BP was females (28 against 16 of males). A study, in Jamaica in 2017, reported that Alcoholic pancreatitis was only seen in males whereas idiopathic and post-ERCP pancreatitis only occurred in females [13]. The greater risk of suffering from alcoholic pancreatitis in men when compared to women is believed to be primarily due to prevalence of habits of heavy drinking [17]. Our study resembles the finding of one of the studies carried out in UK, which reveals occurrence of higher percentage of cases of pancreatitis due to gall stones in females, whereas percentage of cases of pancreatitis due to alcohol consumption higher in males [18]. Similar type of study was carried out in Kathmandu, Nepal, which had also reported that biliary pancreatitis was more common in females than males [19]. One interesting finding noted in our study, is the occurrence of maximum number of

patients (52) suffering from pancreatitis caused by other factors (52 against 40 of AP and 44 of BP). Risk factors for pancreatitis may be cigarette smoking [20], elevated triglycerides level and drug induced [21]. While analyzing amylase and lipase level as the biochemical markers in this study, we found 1040 IU/L and 442 IU/L as the mean value of serum amylase and lipase respectively, which are significantly higher than the control values. The outcomes after the treatment was also evaluated and found that 65% (88 patients) of cases recovered completely, 28% cases (38 patients) developed complications and recovered and the mortality rate was 7% (10 patients) in our study. A similar finding was reported in TUTH, Nepal, which revealed an uneventful recovery in 54% of cases, recovery after complication in 46% of cases and mortality was observed in one patient [10].

#### **Conclusion**

Out of 2204 patients admitted within a year, 136 pancreatitis cases with higher blood level of amylase and lipase enzymes is an indicative of a very high prevalence rate of pancreatitis in this region. The highest number of patients being shared by those suffering from unknown sources, a thorough health check up and investigations including lifestyle, socioeconomic status and food habit etc may be required just to know the actual cause. Out of 40 cases of alcoholic pancreatitis, 36 are males whereas the females are sharing higher (28 out of 44) in the case of biliary pancreatitis. Many of the male members of a family in Nepal, maintain a habit of visiting hotels every evening where alcohol is available and most of the young housewives from well to do families are overweight. Maximum number of operations in NMCTH is cause of Cholecystitis of females.

So, a well regulated awareness program through NGOs or Health department may

be initiated so that consumption of alcohol may be reduced among males. Proper dieting along with regular exercise for young ladies may also be encouraged for maintenance of normal weight.

**Conflict of interest:** None

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