

## LETTER TO THE EDITOR

## Significance of under Air Pollution Serum Amylase, Lipase and C - reactive Protein in Diagnosis of Acute Pancreatitis

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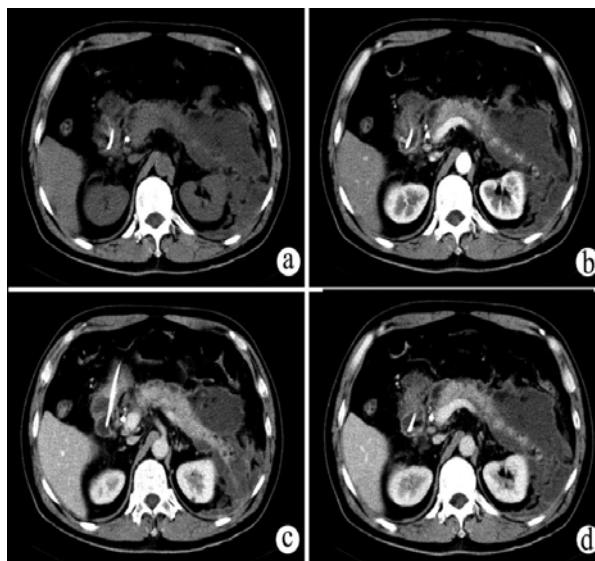
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The study aims to observe and analyze Significance of Under air pollution Serum Amylase, Lipase and C - Reactive Protein in Diagnosis of Acute Pancreatitis. The levels of serum amylase, lipase and C-reactive protein were measured and compared with those of 200 acute abdomen patients of non-acute pancreatitis. Results: Compared with the control group, serum C-reactive protein level in patients with acute pancreatitis was significantly higher. In the stage of admission, blood C-reactive protein in patients with severe acute pancreatitis was higher compared to patients with mild pancreatitis,  $P < 0.05$ ; Serum amylase and lipase levels were significantly higher in patients with acute pancreatitis than those in acute abdomen patients of non-acute pancreatitis ( $P < 0.05$ ). In the ROC curve, serum amylase and lipase have higher area under the curve, both with high accuracy; Conclusion: For diagnosis of acute pancreatitis, joint detection of serum amylase, lipase and C-reactive protein can obtain high accuracy, sensitivity and specificity, which also can be widely used in identification of acute pancreatitis and non-acute pancreatitis of acute abdominal disease.

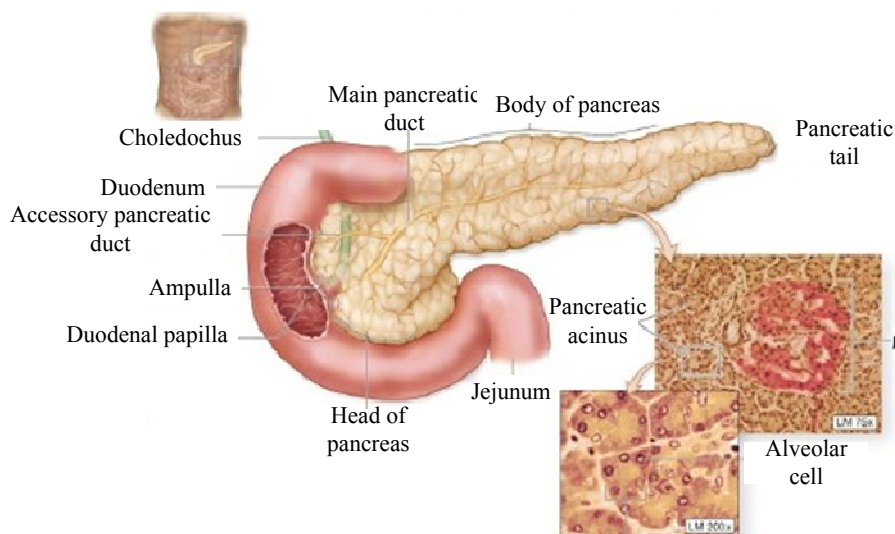
### I Introduction

Zhi wangqian, Guang shengwan, "Yu fengshi, Ying yu. Correlation Analysis of Urban Environment Quality and Medical & Health Service" on Issue 106, Pages: 233-239, Article No: e106018 Year: 2018, in the article, Acute pancreatitis (as shown in Figure 1), an acute abdominal disease with pancreas infection, features acute onset, rapid progression and many complications. Acute pancreatitis has numerous causes, which makes pancreatic enzyme activation within the pancreas, resulting in edema, bleeding, and even necrosis in pancreatic tissue itself (Huang et al. 2013).



**Figure 1. Acute pancreatitis**

The incidence of pancreatitis is usually a combined effect of pancreatic hypersecretion (shown in Figure 2 below) and duodenal ampulla blocking. For patients with severe acute pancreatitis, it can lead to symptoms of systemic infectious poisoning in a short time, and involves multiple organ functions. If not timely treated, it poses a serious threat to the lives of patients (Chen et al 2015).



**Figure 2. Pancreatic secretion**

Considering the dangers of acute pancreatitis, to implement early effective diagnosis and take positive measures for timely treatment is essential (Gao et al. 2017). In this study, under air pollution serum amylase, serum lipase and C-reactive protein were used in diagnosis of acute pancreatitis and the application effect was observed and analyzed. The contents of the report are as follows.

## II Materials and Methods

The study was conducted among 1000 patients with acute pancreatitis who were treated in our hospital between April 2012 and August 2016. Acute pancreatitis patients was divided into severe pancreatitis (SAP) and

mild pancreatitis (MAP) groups, each with 500 cases, according to the relevant criteria in guidelines for diagnosis and treatment of acute pancreatitis (Tian et al 2015) At the same time, 500 cases with healthy physical examination results in our hospital in the same period were selected as health group. And the patients had no cases such as gastrointestinal fester perforation, acute appendicitis and intestinal obstruction. For the severe pancreatitis group, the mean age of the patients was ( $50.8 \pm 12.6$ ) years, there were 268 males and 232 females; for the mild pancreatitis group, the mean age was ( $52.4 \pm 10.9$ ) years, there were 245 males and 255 females; for the healthy group, the mean age was ( $51.7 \pm 14.8$ ) years, there were 220 males and 280 females. For acute abdomen group of non-acute pancreatitis, 200 cases were selected, including 56 cases of acute pancreatitis, 40 cases of acute peritonitis, 45 cases of digestive tract ulcer perforation and 59 cases of acute appendicitis, and the patients' mean age was ( $55.8 \pm 18.6$ ) years. There is comparability in comparison results of the data between the groups,  $P > 0.05$ .

### III Results

As shown in Table 1, the levels of serum amylase, serum lipase and C-reactive protein in the patients with acute pancreatitis were higher than those in the healthy group, and the difference was statistically significant, with P above 0.05.

**Table 1. Comparison of serum amylase, lipase, C-reactive protein levels between acute pancreatitis group and healthy group ( $\bar{x} \pm s$ )**

Group	Case number	Serum amylase (U/L)	Lipase (U/L)	C-reactive protein (mg/L)
Acute pancreatitis group	1000	758.6 $\pm$ 732.8	1628.9 $\pm$ 1664.3	44.58 $\pm$ 65.06
Healthy group	500	85.8 $\pm$ 20.6	93.7 $\pm$ 50.5	1.28 $\pm$ 0.76
P		<0.05	<0.05	<0.05

As shown in Table 2 below, patients with severe pancreatitis had higher level of C-reactive protein compared with patients with mild pancreatitis, with a significant difference ( $P < 0.05$ ). At the same time, there existed no significant difference between the two groups in serum amylase and lipase levels,  $P > 0.05$ .

**Table 2. Comparison of the three indicators between mild pancreatitis, severe pancreatitis groups ( $\bar{x} \pm s$ )**

Group	Case number	Serum amylase (U/L)	Lipase (U/L)	C-reactive protein (mg/L)
Severe pancreatitis group	500	759.8 $\pm$ 732.6	1624.5 $\pm$ 1660.2	139.64 $\pm$ 100.18
Mild pancreatitis group	500	472.8 $\pm$ 385.2	1077.5 $\pm$ 675.4	27.44 $\pm$ 35.49
P		>0.05	>0.05	<0.05

There were significant differences in the levels of serum amylase and lipase between the acute pancreatitis group and non- AP acute abdomen group. The results showed that serum amylase and lipase levels in the two

groups were statistically significant ( $P < 0.05$ ). There were no significant differences in C-reactive protein levels between the two groups ( $P > 0.05$ ), specifically as shown in Table 3 below.

**Table 3. Comparison of the three indicators between acute pancreatitis and non- AP acute abdomen group of acute pancreatitis ( $\bar{x} \pm s$ )**

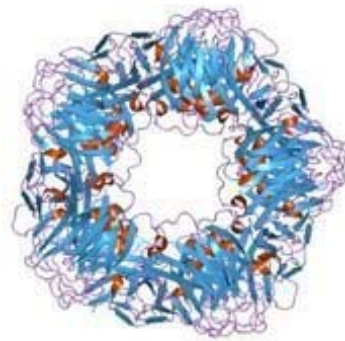
Group	Case number	Serum amylase (U/L)	Lipase (U/L)	C-reactive protein (mg/L)
AP group	1000	758.76±734.72	1626.33±1651.78	44.58±63.05
Non- AP acute abdomen group	200	202.35±208.53	380.78±485.92	28.95±66.92
P		<0.05	<0.05	>0.05

#### IV Discussion

At present, there exists no unified point of view regarding pathogenesis of acute pancreatitis, but there is a common progression, that is, the theory of the pancreas's own digestion, according to which, pancreatic activation causes local pancreatic damage and acute inflammatory reaction, possibly leading to high mortality (Shen et al 2015).

Serum amylase, lipase are commonly used indicators in clinical diagnosis of acute pancreatitis. The more significant the serum amylase activity is, the higher possibility of pancreatitis. Lipase belongs to enzymes synthesized in pancreatic acini (Chen et al. 2018). During pancreatitis, acinar damage causes lipase to flow into blood circulation in large quantities, thereby increasing serum lipase levels (Yang et al 2016). However, study reveals that there does not exist significant correlation between increase degree of amylase and lipase activity with severity of pancreatitis. Hence, sensitivity, specificity and accuracy are not ideal in early diagnosis of acute pancreatitis.

C-reactive protein (shown in Figure 3 below), as a non-specific acute phase protein, has a certain degree of correlation with inflammation degree and can provide effective judgment for disease prognosis. In pancreatic inflammation, C-reactive protein can promote endothelial cell expression of intercellular adhesion molecules and vascular endothelial adhesion factor, monocyte chemotactic protein, and cause pro-inflammatory effect on vascular endothelial cell. At the same time, it can also enhance phagocytosis of leukocytes.



**Figure 3. C-reactive protein**

The results show that when joint detection of serum amylase, lipase and C-reactive protein is used in

diagnosis of acute pancreatitis, obtained sensitivity, specificity and accuracy are the highest and the effect is satisfactory.

## V Conclusion

In summary, joint detection of serum amylase, lipase and C-reactive protein enjoys important application value in early diagnosis of acute pancreatitis. The three indicators can significantly improve sensitivity, specificity and accuracy of the test results, and provide more bases for early diagnosis and treatment of patients.

## Acknowledgements

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