



A STUDY OF PERITONITIS ASSOCIATED HYPERLACTAMIA FOR EVALUATING MORTALITY IN SECONDARY PERITONITIS

Surgery

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ABSTRACT

Perforation peritonitis is a frequently encountered surgical emergency in tropical countries like India. Peritonitis is defined as an inflammation of the serosal membrane that lines the abdominal cavity and the organs contained therein. Lactate levels are normally maintained at less than 1.5 mmol/L using a delicate balance between production and clearance (by liver and kidneys). Hyperlactatemia has shown a correlation with higher mortality. In our study on 105 indoor patients of perforation peritonitis in SMS medical college, Jaipur—we found that higher initial lactate and 24 hr post-op lactate value independently not a predictor of mortality.

KEYWORDS

Lactate, perforation peritonitis, mortality

1.1 INTRODUCTION:

Gastrointestinal perforations constitute one of the commonest surgical emergencies encountered by surgeons.(1,2) Management of these patients continues to be highly demanding despite the advances made in diagnosis and surgical therapy. The etiological spectrum of perforation peritonitis in India differs significantly from its western counterparts.(3-5)

Peritonitis usually presents as an acute abdomen. Local findings include abdominal tenderness, guarding or rigidity, distension, diminished bowel sounds. Systemic findings include fever, chills or rigor, tachycardia, sweating, tachypnea, restlessness, dehydration, oliguria, disorientation and ultimately shock.(6)

Approximately 1500 mmol of lactate is produced daily by muscle fibers, brain, skin, red blood cells and intestine as an end product of glycolysis. Lactate levels are normally maintained at less than 1.5 mmol/L by a delicate balance between production and clearance (by liver and kidneys). Anything that affects lactate production, clearance, or both leads to hyperlactatemia; this is seen in a variety of conditions such as sepsis, shock, cardiac arrest, tissue hypoxia, burns and some pharmacological agents (linezolid, metformin, theophylline etc).(7,8) Various physiological alterations such as increased glycolysis, low pyruvate dehydrogenase activity and reduced clearance due to liver hypoperfusion come into play in sepsis causing a shift towards anaerobic metabolism and hyperlactatemia, which is characteristic of septic states.(9-13)

Hyperlactatemia has shown a correlation with higher mortality—results from the Surviving Sepsis Campaign showed that patients with lactate values greater than 4 mmol/L (with or without hypotension) had a significantly higher in-hospital mortality than those with lactate less than 4 mmol/L, echoing the work of Broder and Weil published many years ago(14) Our study was carried out to highlight the post-operative outcome associated with lactic acid level in post-operative cases of perforation peritonitis (diffuse).

1.2 Patients and method:

A total of 105 patients of perforation peritonitis were studied who were admitted to department of surgery, SMS Medical College Jaipur, Rajasthan, India. All patients underwent exploratory laparotomy. Cases were studied with respect to clinical features at the time of presentation, comorbidities, radiological investigations, operative findings, and postoperative course. After establishing the clinical diagnosis of perforation peritonitis, the patients were prepared for exploratory laparotomy. On performing exploratory laparotomy, the operative findings were noted and the source of peritonitis was found

and managed accordingly. All patients were then treated in the postoperative ward initially under the cover of par-enteral broad-spectrum antibiotics and fluids; orals were started on the appearance of bowel sounds.

Lactate measurements

We measure arterial lactate in peritonitis patients at the time of admission and 24 hr after laparotomy. Mean value of initial lactate (A11), postoperative lactate (AL24) were 2.00mmol/L and 1.6 mmol/L respectively.

1.3 RESULTS:

In our study, we included 105 patients of perforation peritonitis - 98 were male and 7 were female; the mean age was 43.32(range 15-84). The most common site of perforation was peptic, followed by small bowel. The overall mortality rate in the present study was 21.90% (table1).

Table 1 Mortality with lactate levels among study subjects

Mortality with lactate levels	Pre lactate		Post lactate		Result (p value)
	Mean	SD	Mean	SD	
No	1.7	1.03	1.3	.74	0.009 (S)
Yes	3.2	2.01	2.7	2.06	0.383 (NS)

1.4 DISCUSSION

Perforation peritonitis is an important cause of sepsis in surgical patients. Increased lactate level are usually documented in patient of sepsis, however not used as routine indicator of sepsis. In our study raised pre-op lactate was present in 24 patients out of which 11 died and raised post-op lactate was present in 21 out of which 10 died giving a mortality rate of 45.87%and 47.61% respectively. With this data, we calculate p value.383 which is found not significant. Although it has a limitation as serial lactate measurements were not performed and we did not analyze lactate level beyond 24 h, which could have given more information about lactate time trend and outcomes.

1.5 CONCLUSION

We concluded that alone pre and post-operative lactate values are not sufficient to predict mortality in cases of perforation peritonitis rather serial monitoring of lactate may correlate with outcome.

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