

A Study on Raised Serum LDH Level In Acute Intestinal Obstruction- A Marker of Bowel Gangrene.

Dr.Rajaashok M.S¹., Dr.P.Sumathi M.S²., Dr.N.Tamilselvan³.,
^{1,2,3}(Associate Professor, Department Of General Surgery, Government Mohan Kumaramangalam
Medical College)

Abstract:

Background and Objectives: To study the raised level of LDH in patients with acute intestinal obstruction and to correlate with bowel viability.

Methodology: In this study, the estimation of serum LDH was conducted in 45 cases of acute intestinal obstruction admitted in surgery ward of Government Mohan Kumaramagalum Medical College during period of sep2014 to sep2015.

Results: Ischemic changes in any part of bowel can cause elevation in serum levels of LDH and a higher value of >1000 IU/L indicates gangrenous changes. It is less invasive, cost effective and easily available.

Keywords: gangrene, intestinal obstruction, serum LDH.

I. Introduction

Intestinal obstruction accounts for 20% of all surgical emergencies around the world. Intestinal obstruction can result from variety of causes. When strangulation superimposes and blood supply to the bowel is compromised, it leads to bowel gangrene. The most common cause of bowel gangrene secondary to mechanical obstruction is strangulated hernia in India and post operative adhesions in developed countries. The increased mortality is attributed to difficulty in diagnosing the condition early, the late presentation of the patient to the hospital and non availability of précised diagnostic tool for assessing bowel gangrene.

Lactate dehydrogenase is an enzyme found abundant in intestinal mucosa and when the intestinal mucosa undergoes tissue hypoxia or ischemia, it is raised into serum and its serum levels increases. Hence serial estimation of serum LDH helps us to identify whether the obstruction goes on for gangrene or not. This study was conducted to emphasise the significance of early estimation of rise in LDH levels followed by early intervention which helps in reducing morbidity and morality caused by bowel gangrene following obstruction.

II. Objectives

1. To estimate the levels of serum LDH in patients presenting with symptoms of intestinal obstruction.
2. To identify the patients with elevated levels of serum LDH and correlate the elevated levels of LDH with viability of the bowel.

III. Materials And Methods

In this study, the estimation of serum LDH was conducted in 45 cases of acute intestinal obstruction who were admitted in surgical wards of government mohankumaramangalam medical college and hospital during the period of September 2014 to September 2015. LDH was estimated in all the cases preoperatively on the day of admission.

Inclusion criteria:

1. Patient presenting with features of acute intestinal obstruction.
2. Patients with irreducible inguinal or femoral hernia.
3. Patients with features of intestinal obstruction diagnosed preoperatively as a case of SMA/SMV occlusion.

Exclusion criteria:

1. Patients <18years and >80 years.
2. Pregnant women.
3. Psychiatric patients.

All the patients eligible by inclusion and exclusion criteria were included in the study. All the cases were thoroughly examined. Time of presentation and onset of symptoms were noted. Serum LDH was estimated in all patients at the time of admission and the estimated value of serum LDH is compared with viability of the bowel intra operatively.

IV. Observations And Results

Table 1 Obstruction and LDH

| Age | No.Of.Patients With Obstruction | No.Of Patients With Elevated Ldh | No.Of Patients With Gangrenous Bowel |
|-------|---------------------------------|----------------------------------|--------------------------------------|
| 10-20 | 1 | 1 | 1 |
| 20-30 | 5 | 3 | 1 |
| 30-40 | 7 | 4 | 2 |
| 40-50 | 15 | 8 | 7 |
| 50-60 | 9 | 5 | 4 |
| 60-70 | 6 | 3 | 3 |
| 70-80 | 2 | 1 | 2 |
| Total | 45 | 25 | 20 |

Table 2 sex incidence:

| SEX | Male | female |
|-------------|------|--------|
| PERCENTAGE% | 86 | 14 |

Table 3 chief complaints:

| | |
|----------------------|-----|
| Abdominal Pain | 60% |
| Irreducible Swelling | 40% |

Table 4 time of presentation:

| Time Of Presentation | Percentage |
|----------------------|------------|
| >48 Hours | 44% |
| 24 To 48 Hours | 28% |
| <24 Hours | 28% |

Table 5 symptoms and signs associated:

| Signs And Symptoms | Percentage% |
|----------------------|-------------|
| Vomiting | 84 |
| Abdominal Distention | 40 |
| Obstipation | 36 |
| Pyrexia | 24 |
| Blood In Stools | 8 |
| Diarrhoea | 4 |

Table 6 associated factors:

| Associated Factors | Percentage% |
|--------------------|-------------|
| Smoking | 64% |
| Alcohol | 14% |
| Hypertension | 28% |
| Diabetes Mellitus | 30% |

Table 7 X-Ray Abdomen:

| Findings | Percentage |
|-------------------------|------------|
| No Significant Findings | 36% |
| Dilated Bowel Loops | 40% |
| Air Fluid Levels | 24% |
| Air Under Diaphragm | 4% |

Table 8 Etiology:

| Etiology | No.Of Cases | No Of Cases With Increased Ldh | No Of Cases With Gangrenous Bowel |
|-----------------------------------|-------------|--------------------------------|-----------------------------------|
| Adhesive Intestinal Obstruction | 23 | 9 | 7 |
| Strangulated Inguinal Hernia | 8 | 6 | 4 |
| Sma Occlusion | 6 | 4 | 4 |
| Post Operative Constriction Bands | 5 | 3 | 2 |
| Strangulated Femoral Hernia | 2 | 2 | 2 |
| Smv Occlusion | 1 | 1 | 1 |
| Total | 45 | 25 | 20 |

Table 9 ldh levels in various patients:

| Ldh Levels | No.Of Patients With Obstruction | No. Of Patients Without Gangrene | No.Of Patients With Gangrene |
|-------------|---------------------------------|----------------------------------|------------------------------|
| 50 To 200 | 20 | 20 | 0 |
| 200 To 400 | 3 | 3 | 0 |
| 400 To 800 | 4 | 2 | 2 |
| 800 To 1200 | 8 | 0 | 8 |
| >1200 | 10 | 0 | 10 |

Table 10 complications:

| Complication | Percentage |
|------------------|------------|
| Anastomotic Leak | 8% |
| Wound Infection | 16% |
| Wound Gaping | 8% |
| Burst Abdomen | 8% |

V. Discussion

The incidence of bowel obstruction and gangrene is more common in males (72%) and females (28%). Strangulated hernia occurs commonly in males than females may be due to increased physical activities and strenuous efforts ⁽¹⁾. Mesenteric vessel occlusion is also common in males than females may be due to thrombogenic factors like smoking and alcoholism ⁽²⁾. The delayed time of presentation shown to influence the morbidity and mortality. Increased morbidity is seen in gangrene patients due to undue delay in presentation due to prolonged exposure of bacterial toxins leading to onset of septicaemia ⁽³⁾. According to Mucha, an elevated level of LDH is found in 86% of patients who had bowel gangrene ⁽⁴⁾. "LDH is one of the markers in intestinal ischemia". Thompson ⁽⁵⁾. A study conducted by Lange H, Jackel R revealed an inference of 100% sensitivity and 42% specificity for increased LDH in patients presenting with acute abdomen who later are found to have ischemia and gangrene. ⁽⁶⁾ Dr Neil R Feins suggested that the levels of LDH can be taken as criteria for intestinal obstruction ⁽⁷⁾.

References

- [1]. Contemporary management of acute mesenteric ischemia: factors associated with survival. Woosup M Park, Peter Głowiczki, Kenneth J Cherry Jr *JVasc Surg* 2002 mar; 35(3): 445-52 11877691 Cit 52.
- [2]. Mesenteric venous thrombosis and factors associated with mortality : a statistical analysis with 5 year follow up. S AduDaff, M Al-Shahed. *Jgastrointestsurg* 2009 jul; 13(7):1245-50 19296183.
- [3]. Morbidity and mortality after bowel resection for acute mesenteric ischemia. Pratheek K Gupta, Bala Natrajan, Himani Gupta, Xiang Fang, Robert J Fitzgibbons Jr *Surgey*, 2011 Oct; 150(4):779-87 22000191.
- [4]. Mucha P. (1987) small intestinal obstruction. *Surgclin North Am.* 67, 597-620.
- [5]. Thompson J, Bragg, L. West W. (1990). Serum enzyme levels during intestinal ischemia. *Ann Surg* 211, 369-73.
- [6]. Lange H Jackel R. (1994) usefulness of plasma lactate dehydrogenase cone in the diagnosis of acute abdominal disease. *Eur J Surg* 160, 381-84.
- [7]. Dr Neil.R. Feins (1997) *N.Engl.J.Med.* Jul 31, 337, 5.