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Case Report

Alliance between Malabsorption Syndrome and Hypokalemia in Small Bowel Resection: A Case Report

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Abstract

Introduction: This case will outline the malabsorption syndrome and hypokalemia caused by small bowel resection (S/P anastomosis).SBR avert absorption of nutrients and electrolytes from the small intestine which leads to multiple deficiencies.

One of the consequences of malabsorption is that the person becomes weak and malnourished. Potassium is necessary for the proper functioning of your muscles, nerves, and heart.

Low potassium levels have been linked to classic signs and symptoms such as altered mental status, muscular dysfunction and paralysis, and cardiac arrhythmias. One of the first steps in treating patients with non-functioning bowels is to correct electrolyte imbalances. The goal of electrolyte therapy is to prevent complications outside of the gastrointestinal tract. Insufficient digestion and/or absorption of nutritive foods are frequent outcome of significant resection of the digestive tract.

Malabsorption affects millions of people around the world. Resection of a large portion of the small bowel can result in severe to moderate malabsorption, as well as malnutrition and electrolyte imbalance, as seen in this case.

The term "malabsorption syndrome" refers to a group of conditions in which the small intestine is unable to absorb enough nutrients and fluids. Macronutrients (carbs, protein, and fats), micronutrients (vitamins and minerals), or both are nutrients that the small intestine has difficulty absorbing.

Conclusion: The case highlights that small bowel resection induces malabsorption syndrome and hypokalemia in post-operative complication. Hence the physicians need to monitor for the malabsorption signs and symptoms through lab investigations. Further which can be corrected by giving respective treatment and proper diet for the same.

Keywords: Malabsorption syndrome, hypokalemia , small bowel resection, case report.

INTRODUCTION

Abscission to detach a part of the jejunum is designated as enterectomy (small bowel resection). When a section of the small intestine is blocked or diseased, it must be removed. The small intestine is another name for the small bowel. The small intestine is where the majority of the food you eat is digested (broken down and nutrients are absorbed).[1] Potassium levels of less than 2.5 mmol/L are considered dangerous. Low levels can be caused by a variety of factors. Hypokalemia occurs when potassium levels in the blood are abnormally low. [2] Potassium is an essential electrolyte for nerve and muscle cell function, particularly in heart muscle cells. The kidneys regulate potassium levels in the body, allowing excess potassium to be excreted through urine or sweat. [3]

Inadequancy to any part of the gastrointestinal tract leading to poor absorption or digestion can be the reason of malabsorption .These inadequacies occurs as an outcome of the underling mucosal damage, a condition that causes acquired damage to the mucosal layer congenital anomaly at the intestinal layer transport system, reduced absorption of particular nutrients/lack of gastrointestinal motility (decrease peristalsis and stasis). Infection, disrupted bacterial flora, or compromised blood flow or lymphatics are all possible causes. This causes either a general impairment in nutrient absorption or a specific impairment in nutrient absorption. According to aetiology, nutrient absorption occurs in three stages: luminal, mucosal, and postoperative.

Malabsorption is classified based on whether or not the above three stages are present.

Automatic mixing and digestive enzymes are used in the -luminal phase.

-A properly functioning mucosal membrane is required for absorption in the mucosal phase.

-complete blood supply and lymphatic system facilitate the postoperative phase. [4]

CASE REPORT

A 24 year old female patient presented to impatient department with chief complaints of upper and lower limb weakness since 2 days. Her past medical history demonstrated that small bowel resection surgery was performed 4 months

back in tertiary care hospital. Apart from that nothing more significant was detected. At the time of admission the patient appears to be exhausted, conscious oriented and moderately malnourished. At the same time provisional diagnosis of the patient stated to be malabsorption syndrome. On examination her vitals were measured to be. Pulse rate 102 beats/min, Respiratory rate-22beats/min, blood pressure- 100/50mmHg, temperature-98 degree F, oxygen saturation level-94%.

CNS: conscious and oriented, CVS: S1S2+, RS: NVBS+.

LAB INVESTIGATIONS

Table 1: laboratory investigations

Sr.no	TEST	FINDING	REFRENCE
1	RBC	2.63mcl	4.7-6.1mcl
2	Hemoglobin	8.3gm%	13.0-17.0gm%
3	Lymphocytes	15.7%	20-45%
4	Eosinophils	0.3%	1-6%
5	Urea/BUN	21mg/dl	10-15gm/dl
6	cholesterol	48mg/dl	150-250gm/dl
7	triglycerides	35mg/dl	65-170mg/dl
8	LDL	07mg/dl	90-136mg/dl
9	SGOT/AST	49µl	<40µl

ELECTROLYTE INVESTIGATIONS

Table 2: electrolyte investigations

1	Sodium	128mEq/L	133-146mEq/L
2	Potassium	2.1mEq/L	3.6-5.2mEq/L
3	Calcium	5.8mg/L	8.6-10.3mg/dl
4	urinary sodium	58mEq/L	20mEq/L
5	urinary potassium	7mEq/L	20mEq/L
6	urinary magnesium	↓	1.3-2.1mEQ/L

Further On laboratory investigation patient's diagnosis was confirmed to be malabsorption syndrome with hypokalemia. On admission the patient was administered with intravenous fluids 2⊙ ringer lactate,1⊙DNS with multivitamin infusion @50ml/hr , inj potassium chloride in 500ml NS, syrup potklor-15ml TID(potassium chloride) for treatment of hypokalemia, Inj pipzo 4.5g TID for prevention of bacterial infection, Inj pantop-40mg OD, Inj celemin IV 500ml OD, Inj celepid IV 1200mg OD Above two drugs were prescribed on alternate days. inj neurobion forte IV (vitamin B1+vitamin B6+vitamin B12) OD, Inj calcium gluconate 500mg,cap.calcitriol 0.25µg OD ,tab calcium 500mg OD, (calcium supplements) prescribed for hypocalcaemia. For the improvement of digestion from day six tab sporolac DS (probiotic) was prescribe, As on the sixth day patient complained of diarrhea tab racecadotril 100mg TID was prescribed , ORS for dehydration.With the above given treatment patient's condition was found to be improving.

DISCUSSION

In this case a female patient was admitted with the complaints of upper and lower limb weakness, fatigue followed by diarrhea. Having undergone small bowel resection in the past. In the post operational period the patient was diagnosed with malabsorption syndrome and hypokalemia due to poor absorption of the nutrients from the intestine or bowel. After the diagnosis the course of treatment was given to the patient for the correction of the syndrome which leads to the improvement in patient's condition.

Low potassium levels can cause tiredness, deficiency, or pang in arm or leg muscles, which on certain occasions can be extreme enough to cause incapacity to cross hands or legs due to weak point (much like paralysis). Other symptoms consist of prickle or insensibility, feeling nauseous and palpitations. [5]

A case learn about small bowel resections imply the loss of greater than 100cm of ileum often result in extreme malabsorption complication. In colon, unabsorbed bile salts stimulate fat and water secretion, ensuring diarrhea. [6]

The probability and severity of malnutrition that takes place after intestinal resection is decided by the vicinity and extent of intestinal resection, just as it is with malabsorption and diarrhea.

Potassium balance is largely influenced by its distribution and excretion as they react to intake. Many conditions relevant to the surgical patient can alter potassium levels. Across plasma membranes, intracellular and extracellular potassium, as well as potassium and hydrogen ions, exchange, link acidosis to hyperkalemia and alkalosis to hypokalemia. Potassium retention can occur as a result of renal insufficiency, which can be acute or chronic. Low magnesium levels can cause excessive potassium excretion. [7]

The following are the general guidelines for treating malabsorption syndrome.

-To replenish fluids and nutrients, hospitalisation may be required.

-Treatment is also dependent on the symptoms and cause of malabsorption, such as antibiotics if infection is the cause. [8]

CONCLUSION:

The case highlight that small bowel resection induces malabsorption syndrome and hypokalemia in post operative complication. Hence the physicians need to monitor for the malabsorption signs and symptoms through lab investigations. Further which can be corrected by giving respective treatment and proper diet for the same.

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