Case Report

Neostigmine for treatment of acute colonic pseudo-obstruction

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Abstract

Acute colonic pseudo-obstruction is managed with bolus neostigmine as shown in a recent prospective, double blind, placebo-controlled study. Parasympathetic stimulation with neostigmine leads to abdominal pain, salivation, and symptomatic bradycardia. We submit a more effective method may involve use of neostigmine infusion to reduce complications and improve efficacy.

Key Words: Acute colonic pseudo-obstruction, Neostigmine

Introduction

Acute colonic pseudo-obstruction is a massive dilation of the colon in the absence of any mechanical obstruction. It is synonymous with the term Ogilvie's syndrome.[1] A recent prospective, double-blind, placebo-controlled study showed that in patients, nonresponsive to conservative management, bolus neostigmine rapidly decompresses the colon.[2] The pharmacologic approach is based on the theory that the severe form of adynamic obstruction is due to ineffective colonic motilty caused by excessive sympathetic stimulation, para-sympathetic dysfunction or both. Colonic distension may recur in 40% of patients despite initial decompression.[3] However, bolus neostigmine often causes symptoms related to parasymthetic stimulation such as abdominal pain, vomiting, salivation, and symptomatic bradycardia. A more effective method may involve the use of neostigmine infusion, reducing complications and improving efficacy.[4]

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Case Report

A 74-year-old man was admitted in the intensive care unit with septic foci of his right knee, one week after a bilateral knee replacement. He had under gone a coronary artery bypass graft 4 years previously.

He was hypotensive on admission, managed with antibiotics, fluid resuscitation, and noradrenaline. He was taken to the theatre and pus was drained out from the knee. Postoperatively he slowly developed abdominal distension that was massive after 24 h, despite a large bore nasogastric tube with low suction and hourly aspiration. A rectal examination showed empty rectum. An abdominal radiograph showed a massive large bowel dilation with caecal diameter of 12 cm. Measurement of intra-abdominal pressure (IAP) showed an abdominal compartment syndrome with a pressure of 25–30 cm of water. A flatus tube was passed and left *in situ*. Serum electrolytes, renal, hepatic, and thyroid functions were unremakable. An abdominal computed tomography (CT) was performed which showed no signs of mechanical obstruction. A surgical opinion confirmed there was no indication for operative intervention. An intravenous in-

fusion of neostigmine was commenced – 2 mg in 50 ml of normal saline infused at a rate of 2 ml/h.

A rapid massive passage of flatus and stool occured within 4 h. The infusion was carried out for 24 h, with eight hourly IAP measurements showing a gradual reduction to 10 cm of water along with resolution of abdominal distension. A plain abdominal radiograph was repeated and showed resolution of the colonic dilation. During the infusion, no episodes of bradycardia or excessive salivation were noted. On the third day of intensive care, he was started on liquids, leading to oral feed over next 3 days without occurrence of abdominal distension and the patient was discharged to the ward.

Discussion

Murphy in 1896 first described colonic pseudo-obstruction.[5] In 1948, Sir Heneage Ogilvie described two patients with colonic pseudo-obstruction resulting from malignant infiltration of the coeliac plexus, postulating this syndrome was due to lack of sympathetic activity.[1]. Although the pathophysiology of acute colonic pseudo-obstruction is still not clear, it includes multiple pharmacological and metabolic factors leading to excessive para-symathetic suppression, sympathetic stimulation or both, more so in elderly population. Many factors, such as opioids use, postoperative ileus, use of catecholamines, high levels of sympathetic-adrenal-cortical activity are all common in critically ill. Thus, this forms the rationale behind the pharmacological approach with early studies on guanethidine and prostigmine 30 years ago. Wendt identified the association between increased IAP and renal impairment about 140 years ago.[6] We know raised IAP has adverse sequelae leading to visceral,[7] renal[8] ischemia, leading to systemic effects of abdominal compartment syndrome (ACS).

The systemic extra abdominal effects include raised intra cranial pressure,[9] reduction in cardiac output, and a decrease in ventilation, oxygenation and compliance.[9,10] If untreated acute pseudo-obstruction may lead to multiple organ failure or caecal perforation.[11] The risk of colonic perforation is reportedly increased when the caecal diameter exceeds 12 cms and when distension is present for more than 6 days[2,12]

Colonoscopy is a difficult procedure in a case of massive abdominal distension and has a high morbidity and mortality.[11] Surgical intervention is reserved for patients who have not responded to more conservative therapy or has developed bowel ischemia or perforation.[2] Neostigmine is hydrolysed by plasma cholinesterase and serum half life is increased in renal failure thus a smaller dose regimen is recommended. It can also exacerbate underlying bronchospasm and increases secretions. Neostigmine induced bradycardia may occur. In summary we have found neostigmine infusion is an effective modality of treatment for colonic pseudo-obstruction with minimal side effects. The use of neostigmine infusion should be used before colonoscopy after conservative management has failed in severe adynamic ileus.

References

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