

Neostigmine for treatment of acute colonic pseudo-obstruction

Introduction

Acute colonic pseudo-obstruction is the gross dilatation of the colon without mechanical obstruction. It commonly presents with abdominal distention, nausea, vomiting and constipation. It may lead to respiratory embarrassment and ventilation failure in long term ventilation patients, leading to critical care admission.

Neostigmine is a reversible anticholinesterase inhibitor. By increasing the amount of acetylcholine available at M2 and M3 muscarinic receptors, intestinal muscle contraction is stimulated promoting passage of stool. ¹ Neostigmine by bolus and/or infusion is a safe and effective option for patients with acute colonic pseudo-obstruction that has failed to respond to conservative measures. ^{2,3}

Indications

Acute colonic pseudo-obstruction not responding to conservative measures.

Side effects

Side effects include abdominal pain, increase in secretions (patients may require increased frequency of subglottic suctioning), vomiting and bradycardia. Significant bradycardia occurs in <7% of patients treated with neostigmine by bolus or infusion.

Contraindications and cautions

Contraindications: mechanical bowel obstruction, inflammatory bowel disease, recent bowel surgery, poorly controlled asthma.

Cautions: pre-existing bradycardia, hyperthyroid, peptic ulceration.

Dosing and administration

Continuous monitoring of ECG during the administration is mandatory.

Atropine sulphate should always be available and drawn up at the bedside to counteract severe cholinergic reactions should they occur.

Dosing:

By intravenous bolus: 2mg over 5 minutes. If no response, dose may be repeated after 3 hours in patients with preserved renal function or 6 hours if renal function impaired

By intravenous infusion: 0.4mg/hr as initial rate doubling to 0.8 mg/hr if no clinical response within 8 hours, for a total of 24 hours.

¹ Smedley LW, Foster DB, Barthol CA, et al. Safety and Efficacy of Intermittent Bolus and Continuous Infusion Neostigmine for Acute Colonic Pseudo-Obstruction. *J Intensive Care Med* 2020; 35: 1039–1043.

² Valle RGL, Godoy FL. Neostigmine for acute colonic pseudo-obstruction: A meta-analysis. *Ann Med Surg* 2014; 3: 60–64.

³ Van Der Spoel JI, Oudemans-van Straaten HM, Stoutenbeek CP, et al. Neostigmine resolves critical illness-related colonic ileus in intensive care patients with multiple organ failure - A prospective, double-blind, placebo-controlled trial. *Intensive Care Med* 2001; 27: 822–827.

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