ACUTE RISE OF PaCO₂ AS A SIGN OF PERFORATED BOWEL

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Background: PaCO₂ rises during peritoneal insufflation of CO₂ in laparoscopic procedures, due to absorption from the peritoneum (1). This phenomenon may occur when "starved", diseased bowel with bacterial overcolonization, and thus bacterial CO₂ overproduction (2), perforates and causes pneumoperitoneum.

Case description: A 42 y old female with active small and large bowel Crohn's disease needed ventilatory support because of acute liver damage (acetaminophen induced) and sepsis. Nutritional support was provided by TPN only. Ten days following ICU admission, an hour after colonoscopy, routine ABG's revealed an acute respiratory acidosis (TABLE). The patient was at all times heavily sedated and no changes in ventilatory settings/demand or physical examination were noted. Chest-X-Ray taken at this time showed no change in lung volumes or diaphragmatic contour but demonstrated free air under the diaphragms. At operation, a perforated sigmoid, with significant free peritoneal air was found.

TABLE

TIME	MV _E (L)	PaCO ₂ (mmHg)	pH
PRE-PERF.	6.3	49	7.52
POST-PERF.	6.3	83	7.26
POST-OP.	7.4	56	7.37

Conclusions: Acute respiratory acidosis may be an early ominous sign of a diseased and "starved" bowel perforation in heavily sedated totally ventilator dependant MV_E patient. Further attention of intensivists to validate this pilot observation is needed.

(1) T. Ooka, Y. Kawano, et al: Blood gas changes during laparoscopic cholecystectomy. Masui 1993;42(3):398-401.

(2) GH. Bornside, WE. Donovan, MB. Myers: Intracolonic tensions of O₂ and CO₂ in germfree, conventional, and gnotobiotic rats. Proc Soc Exp Biol Med 1976; 151(2):437-441.