

# Hubungan antara Kejadian Ileus Pascaoperasi Laparotomi dengan Status Hidrasi Praoperasi Berdasarkan Bioelectrical Impedance Vector Analysis di RSUPN dr. Cipto Mangunkusumo = Association between Postoperative Ileus After Laparotomy and Preoperative Hydration Status Measured by Bioelectrical Impedance Vector Analysis at dr. Cipto Mangunkusumo Hospital

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## Abstrak

Latar Belakang: Ileus pascaoperasi (IPO) terjadi pada 3 – 32% pascaoperasi abdomen mayor. Prevalensi IPO di RSUPN dr. Cipto Mangunkusumo (RSCM) sendiri belum diketahui. Imbang cairan perioperatif berkontribusi terhadap kejadian IPO. Berbagai studi menunjukkan imbang cairan intra- dan pascaoperasi yang positif berhubungan dengan peningkatan risiko IPO, namun peran status hidrasi praoperasi belum diketahui. Pemeriksaan bioelectrical impedance vector analysis (BIVA) mulai digunakan untuk evaluasi status hidrasi, namun metode ini belum umum digunakan untuk evaluasi cairan perioperasi. Penelitian ini dilakukan untuk mengetahui insidensi IPO di RSCM, serta mengetahui hubungan antara IPO dengan status hidrasi praoperasi berdasarkan BIVA. Metode: Penelitian ini adalah studi potong lintang pada pasien yang menjalani laparotomi elektif di RSCM, Jakarta. Diambil karakteristik praoperasi berupa data demografis, antropometri, dan status hidrasi yang meliputi BIVA, osmolalitas serum, imbang cairan, dan rasio blood urea nitrogen/creatinine (rasio BUN/Cr); karakteristik intraoperasi yaitu imbang cairan intraoperasi, lama operasi, dan jumlah perdarahan; serta status hidrasi pascaoperasi yang dinilai pada hari kedua pascaoperasi. Dilakukan analisis hubungan IPO dengan status hidrasi praoperasi berdasarkan BIVA, yang dilanjutkan dengan analisis multivariat untuk menyingkirkan faktor perancu.

Hasil: Sebanyak 90 subjek menjalani laparotomi elektif untuk kasus digestif (37,8%), ginekologi (57,8%), urologi (2,2%), serta join digestif-vaskular dan digestif- ginekologi (2,2%). Status hiperhidrasi praoperasi berdasarkan BIVA didapatkan sebanyak 38,9% dan meningkat menjadi 74,4% pascaoperasi. Osmolalitas serum pra- dan pascaoperasi berada dalam rentang normal dan tidak menunjukkan perubahan yang bermakna, sedangkan imbang cairan dan rasio BUN/Cr meningkat bermakna pascaoperasi. Status hiperhidrasi praoperasi berhubungan bermakna dengan IPO (OR 3.386, 95% CI 1.319 – 8.601; p=0.009). Namun berdasarkan analisis multivariat, hanya jumlah perdarahan intraoperasi (> 500 mL) yang berhubungan dengan IPO (OR 7.95, 95% CI 1.41 – 44.78; p=0.019). Stratifikasi lebih lanjut menunjukkan status hiperhidrasi praoperasi meningkatkan risiko IPO pada subjek dengan jumlah perdarahan intraoperasi kurang dari 500 mL (OR 6.8, 95% CI 1.436 – 32.197; p =0.016). Kesimpulan: Status hidrasi praoperasi menentukan keluaran klinis pascaoperasi. Status hiperhidrasi praoperasi berdasarkan BIVA ditemukan berhubungan dengan peningkatan risiko IPO laparotomi, namun status hiperhidrasi praoperasi dapat dimodifikasi oleh jumlah perdarahan intraoperasi. Dibutuhkan studi lebih lanjut hubungan antara IPO dengan status hiperhidrasi praoperasi, terutama pada kelompok subjek dengan jumlah perdarahan intraoperasi kurang dari 500 mL.

.....Background: Postoperative ileus (POI) is a complication commonly found after major abdominal surgery, with a prevalence of 3 – 32%. Prevalence of POI at dr. Cipto Mangunkusumo Hospital (RSCM) is

yet to be reported. Perioperative hydration status contributes to the risk of developing POI. Studies have shown that positive intra- and postoperative fluid balance are associated with increased risk of POI, but the role of preoperative hydration status is not yet known. Bioelectrical impedance vector analysis (BIVA) has started to be used widely to evaluate hydration status, nonetheless it is still not commonly used in evaluation of perioperative hydration status. This study aims to determine POI incidence in RSCM, and to explore the association between IPO and preoperative hydration status evaluated with BIVA. Methods: This study was a cross-sectional study done at RSCM, Jakarta. We recruited patients who were scheduled to undergo elective laparotomy. Preoperative characteristics were collected such as demographical data, anthropometry, and hydration status including BIVA, serum osmolality, fluid balance, and blood urea nitrogen/creatinine (BUN/Cr) ratio; intraoperative characteristics such as fluid balance, length of surgery, and total bleeding volume; and postoperative hydration status which was analyzed in postoperative day two. Analysis to determine the association between POI and preoperative hydration status by BIVA was done, and continued with logistic regression analysis to control confounding factors.

Results: Ninety subjects recruited in this study underwent elective laparotomy for digestive (37,8%), gynecology (57,8%), urology (2,2%), also joined digestive-vascular and digestive-gynecology (2,2%) surgery. Preoperative hyperhydration by BIVA was found in 38,9% subjects, and increased to 74,4% postoperatively. Pre- and postoperative serum osmolality were within normal range and did not show any significant increment, while fluid balance and BUN/Cr ratio increased postoperatively. Preoperative hyperhydration was associated with POI (OR 3.386, 95%CI 1.319 – 8.601;  $p=0.009$ ). Only total bleeding volume ( $> 500$  mL) was found to increase the risk of POI after logistic regression analysis (OR 7.95, 95% CI 1.41 – 44.78;  $p=0.019$ ). Further stratification analysis showed that preoperative hyperhydration increased the risk of POI in subjects with total bleeding less than 500 mL (OR 6.8, 95% CI 1.436 – 32.197;  $p=0.016$ ). Conclusion: Preoperative hydration status has an impact on postoperative clinical outcome. Preoperative hyperhydration was found to increase the risk of POI, but preoperative hyperhydration status could be modified by the degree of intraoperative bleeding. Further study needs to be done to determine the link between POI and preoperative hyperhydration, especially in subjects with total bleeding less than 500 mL.