

MALTODEXTRIN MENURUNKAN KADAR IL-1 PADA *ENHANCED RECOVER AFTER CESAREAN SURGERY* (ERACS)

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ABSTRAK

Latar Belakang: Puasa preoperatif yang berkepanjangan serta trauma pembedahan pada sectio caesarea dapat memperburuk kondisi metabolik akibat peningkatan resistensi insulin, hiperglikemia, dan sekresi sitokin proinflamasi. Pemuatan karbohidrat preoperatif sebagai bagian *Enhanced Recovery After Cesarean Surgery* (ERACS) dapat menurunkan respon stress metabolik dan mempercepat pemulihan. Maltodekstrin sebagai sumber karbohidrat berpotensi menekan inflamasi, namun bukti terhadap pengaruhnya khususnya pada kadar interleukin-1 (IL-1) masih terbatas.

Tujuan: Mengevaluasi pengaruh pemberian maltodekstrin preoperatif terhadap kadar IL-1 sebagai marker inflamasi pada pasien yang menjalani ERACS.

Metode: Penelitian *randomized pre and post-test controlled group* melibatkan 44 pasien ERACS di Rumah Sakit Nasional Diponegoro dan RSD K.R.M.T. Wongsonegoro Semarang. Subjek secara acak dialokasikan ke dalam kelompok perlakuan (P, n=22) yang menerima larutan karbohidrat iso-osmolar oral mengandung 12,5% maltodekstrin 800 ml pada 8 jam dan 400 ml pada 2 jam preoperasi, dan kontrol (K, n=22) yang puasa 6 jam preoperasi. Pemeriksaan IL-1 dilakukan sebelum dan 2 jam pasca operasi. Uji *independent-t* dan *paired-t* digunakan untuk menilai perubahan kadar IL-1 pada kedua kelompok.

Hasil: Tidak ada perbedaan usia, indeks massa tubuh, usia kehamilan, durasi operasi, dan kadar IL-1 preoperasi diantara kedua kelompok ($p>0,05$). Kedua kelompok mengalami penurunan kadar IL-1 postoperasi yang signifikan dibandingkan preoperasi ($p<0,001$). Kadar IL-1 postoperasi lebih rendah pada perlakuan dibandingkan kontrol ($23,17 \pm 4,42$ vs $29,66 \pm 6,20$ pg/mL; $p<0,001$). Penurunan kadar IL-1 lebih besar pada perlakuan dibandingkan kontrol ($11,41 \pm 4,99$ vs $3,38 \pm 1,72$ pg/mL; $p=0,004$).

Kesimpulan: Pemuatan karbohidrat preoperasi dengan maltodekstrin dapat meringankan respon inflamasi perioperatif pada SC yang ditunjukkan dengan menurunnya kadar IL-1.

Kata kunci : ERACS, maltodekstrin, pemuatan karbohidrat, sectio caesaria

ABSTRACT

Background: Prolonged preoperative fasting and surgical trauma during cesarean section can exacerbate metabolic disturbances due to increased insulin resistance, hyperglycemia, and pro-inflammatory cytokine secretion. Preoperative carbohydrate loading, as part of the Enhanced Recovery After Cesarean Surgery (ERACS) protocol, could reduce metabolic stress responses and accelerate recovery. Maltodextrin, as a carbohydrate source, has the potential to suppress inflammation; however, evidence regarding its effect, particularly on interleukin-1 (IL-1) levels, remains limited.

Objective: Evaluate the effect of preoperative oral maltodextrin administration on IL-1 levels as a marker of inflammation in patients undergoing ERACS.

Methods: A randomized pre- and post-test controlled group design was conducted involving 44 ERACS patients at the National Diponegoro Hospital and K.R.M.T. Wongsonegoro Regional Hospital, Semarang. Subjects were randomly allocated into a treatment group (P, n=22) that received oral iso-osmolar carbohydrate solution containing 12.5% maltodextrin (800 mL at 8 hours and 400 mL at 2 hours preoperatively), and control group (K, n=22) that fasted for 6 hours. IL-1 levels were measured before and 2 hours after surgery. Independent t and paired t-tests were used to analyze IL-1 changes in both groups.

Results: There were no significant differences between the groups in age, body mass index, gestational age, duration of surgery, or preoperative IL-1 levels ($p > 0.05$). Both groups experienced a significant reduction in postoperative IL-1 levels compared to preoperative values ($p < 0.001$). Postoperative IL-1 levels were lower in the treatment group compared to the control (23.17 ± 4.42 vs. 29.66 ± 6.20 pg/mL; $p < 0.001$). The decrease in IL-1 levels was greater in the treatment group than in the control (11.41 ± 4.99 vs. 3.38 ± 1.72 pg/mL; $p = 0.004$).

Conclusion: Preoperative carbohydrate loading with maltodextrin may attenuate the perioperative inflammatory response in cesarean section, as indicated by a reduction in IL-1 levels.

Keywords: ERACS, maltodextrin, carbohydrate loading, cesarean section