

# Hubungan Defisiensi Vitamin D Serum Praoperasi dengan Kejadian Infeksi Daerah Operasi Pasca Laparotomi Elektif = Association between Preoperative Serum Vitamin D Deficiency and Surgical Site Infections after Elective Laparotomy

Freesia Novita Kusumawardani, author

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## Abstrak

Latar Belakang: Infeksi daerah operasi (IDO) merupakan salah satu komplikasi pascaoperasi tersering yang meningkatkan morbiditas, mortalitas, dan beban biaya kesehatan. Penerapan strategi pencegahan hanya menurunkan sedikit angka infeksi nosokomial pada pembedahan. Vitamin D diketahui memiliki pengaruh pada regulasi imun dan penyembuhan luka. Namun, hanya sedikit studi yang menilai efek potensialnya dalam mengurangi kejadian IDO dengan hasil yang didapatkan belum konsisten. Penelitian ini bertujuan untuk menilai hubungan status vitamin D serum praoperasi dengan kejadian IDO pascalaparotomi elektif. Metode: Studi kohort prospektif ini dilakukan pada subjek berusia 18–65 tahun di RS pendidikan tersier, RSUPN Dr. Cipto Mangunkusumo, yang dirawat untuk laparotomi elektif pada bulan Maret hingga Juni 2023. Pengukuran 25-hidroksi vitamin D serum praoperasi menggunakan metode chemiluminescent microparticle immunoassay (CMIA) dengan cutoff defisiensi pada kadar <30 ng/mL. Penegakkan diagnosis IDO berdasarkan kriteria Centers for Disease Control and Prevention dilakukan melalui pemantauan harian selama 30 hari pascaoperasi. Analisis bivariat dan multivariat digunakan untuk menilai hubungan antara variabel bebas dan terikat, serta mengidentifikasi faktor perancu lain yang berhubungan dengan IDO. Hasil: Dari total 117 subjek penelitian, sebanyak 90,4% subjek defisiensi vitamin D dan 20,5% subjek mengalami IDO. Defisiensi vitamin D praoperasi signifikan meningkatkan risiko kejadian IDO dibandingkan tidak defisiensi (RR 1,16, 95% CI 1,07–1,26). Analisis lanjutan dengan regresi logistik untuk faktor perancu lain memperoleh bahwa status albumin serum praoperasi menjadi faktor yang paling signifikan meningkatkan risiko kejadian IDO.

Kesimpulan: Terdapat hubungan yang bermakna secara statistik antara defisiensi vitamin D serum praoperasi dengan kejadian IDO pascalaparotomi elektif.

.....Background: Surgical site infection (SSI) is one of the most common postoperative complications that increases morbidity, mortality, and healthcare costs. The implementation of preventive strategies has only resulted in a slight reduction in nosocomial infection rates in surgical procedures. Vitamin D is known to have an influence on immune regulation and wound healing. However, there have been few studies assessing its potential effect in reducing the incidence of SSI, and the results obtained so far have been inconsistent. This study aims to assess the relationship between preoperative serum vitamin D status and the occurrence of SSI after elective laparotomy.

Methods: This prospective cohort study was conducted on subjects aged 18–65 years at a single tertiary teaching hospital, RSUPN Dr. Cipto Mangunkusumo, who underwent elective laparotomy from March to June 2023. Measurement of preoperative serum 25-hydroxy vitamin D was done using the chemiluminescent microparticle immunoassay (CMIA) method with a deficiency cutoff at levels <30 ng/mL. The diagnosis of SSI was based on the Centers for Disease Control and Prevention criteria through daily monitoring for 30 days postoperatively. Bivariate and multivariate analyses were used to assess the

relationship between independent and dependent variables and identify other confounding factors associated with SSI.

Results: Out of a total of 117 study subjects, 90.4% were vitamin D deficient, and 20.5% developed SSI. Preoperative vitamin D deficiency significantly increased the risk of SSI compared to non-deficiency (RR 1.16, 95% CI 1.07–1.26). Further analysis using logistic regression for other confounding factors revealed that preoperative serum albumin status was the most significant factor in increasing the risk of SSI.

Conclusion: There is a significant statistical association between preoperative serum vitamin D deficiency and the occurrence of SSI after elective laparotomy.