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Clostridium difficile infection and risk of colectomy in patients with inflammatory bowel disease: A bias-adjusted meta-analysis

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Abstract

Clostridium difficile Infection (CDI) may be a common complication of inflammatory bowel diseases (IBDs) and is related to worse outcome. Variable rates of colectomy are reported among IBD complicated by CDI. We conducted a scientific review and bias-adjusted meta-analysis of studies to assess the association between CDI and colectomy among patients with IBD. Studies were limited to cohort, case???control and cross-sectional studies reporting colectomy risk stratified by CDI in patients with IBD. We estimated summary ORs and 95% CIs using the quality-effects model. Study quality was assessed using an adaptation of the Newcastle???Ottawa scale. We found that CDI was a major risk factor for colectomy among patients with IBD, mainly patients with colitis, almost doubling the chances (OR 1.90; 95% CI, 1.23???2.93). There was significant heterogeneity across studies (Q=22.02, P<0.001; I2=68%). Funnel plots were grossly asymmetrical. Results of sensitivity analysis restricting studies to those reporting inflammatory bowel disease only and studies using laboratory tests to substantiate CDI were in keeping with the result from the most analysis. CDI could be a significant risk factor for colectomy in patients with IBD. Further research is required to research the attributable risks of surgery thanks to CDI among patients with inflammatory bowel disease. Inflammatory bowel disease (IBD), comprising colitis (UC) and regional enteritis (CD), may be a chronic relapsing disorder of genetically susceptible individuals exposed to environmental precipitants.The initial management of IBD is medical therapy until treatment fails or a complication arises. Most patients with CD and up to 35% of patients with UC required intestinal resection during the course of their disease.However, improved medical therapy has resulted in decreased surgical interventions among patients with IBD.

surgical procedure for IBD is related to significant postoperative mortality and morbidity. Identifying risk factors associated with severe IBD flares that need surgery could be a clinical priority. Factors driving aggressive presentation within the early disease course of IBD don't seem to be known. Historically, Clostridium difficile infection (CDI) is taken into account a crucial risk think about IBD exacerbations, and is related to worse clinical outcomes. The incidence of CDI has increased significantly among patients with IBD, with recurrence in about one-third of both children and adults. Individual studies have found that IBD patients with CDI have a better rate of colectomy and a greater mortality than either non-CDI IBD or non-IBD CDI controls. Peng et al18 conducted a meta-analysis employing a fixed-effects model and located that UC patients with CDI had significantly higher surgical rates than patients with UC without CDI (OR: 1.76, 95% CI, 1.36–2.28). Interpreting the results of this study is difficult thanks to the exclusion of studies using diagnostic codes to verify CDI. Given that CDI is common in both active UC and CD, it's important to own better evidence round the potential effect of CDI on the danger of colectomy in both groups. Most studies examining the association have used the International Classification of Diseases (ICD) codes to judge C. difficile diagnosis. Review articles excluding studies using diagnostic codes to spot CDI may cause some extent of bias.

Therefore, we conducted a scientific review and meta-analysis of studies using either laboratory methods or diagnostic codes to judge CDI to see the association between CDI and colectomy among patients with IBD. Results from sensitivity analyses using the random-effects model and IVhet model were in keeping with the results from the quality-effects model. Incorporation of univariate quality scores have long been a detail within the literature. Juni et al39 suggested that the utilization of summary scores to spot trials of top quality is problematic and provides unreliable estimates of effect. However, Juni's analysis was limited by stratification of studies using quality and any difference in estimate would be keen about the distribution of precision and effect sizes within quality strata—not on quality. Similarly, Greenland et al40 also suggested that univariate quality scores are often misleading but this was within the context of quantitative bias modeling. The quality-effects model doesn't model bias and after all starts from the premise that the impact of the standard score on the direction and magnitude of a study effect is unknown. what's assessed is that the relative possibility of bias (relative to the most effective study within the list) and an artificial bias variance is modeled using an intraclass parametric statistic. Given this approach, subjectivity of quality scoring becomes irrelevant because any score that has some

information value will improve the reliability of estimation. the sole condition under which the quality-effect model may be made to deteriorate in performance is when quality is deliberately inverted (the best study listed the worst). There are several limitations during this meta-analysis. First, although we performed a comprehensive systematic explore for studies, publication bias could have resulted in positive associations between colectomy and CDI. the particular risks due to the infection may well be but what we found within the meta-analysis. The epidemic patterns of CDI in IBD may differ between areas and countries, and so the generalizability of this study is proscribed. additionally, 2 studies used ICD diagnostic coding to spot cases, although the accuracy of ICD-10 coding for CDI has been assessed with 99.4% specificity and 82.1% sensitivity among patients with UC. it's going to underestimate the prevalence of CDI among patients with IBD as a results of miscoding and missed diagnoses. Finally, all studies reviewed were observational studies and therefore the time order of exposure and outcome isn't clear in most studies. Therefore, the results should be interpreted with caution.

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