Paper #4

Administrative Databases Can Yield False Conclusions – an Example of Obesity in Total Joint Arthroplasty

Jaiben George, MBBS, Jared M. Newman, MD, Alison K. Klika, MS, Carlos A. Higuera, MD, Wael K. Barsoum, MD

Introduction: Research using large administrative databases has substantially increased in the recent years. Obesity is highly prevalent among patients undergoing total joint arthroplasty (TJA), and obese TJA patients may be at higher risk for complications. Accuracy with which comorbidities are represented in these administrative databases has been questioned. The purpose of this study was to evaluate the extent and impact of errors in obesity coding in TJA research using a single healthcare system dataset.

Methods: A total of 18,030 primary total knee arthroplasties (TKA) and 10,475 total hip arthroplasties (THA) performed at a single healthcare system from 2004-2014 were included. Patients were classified as obese or non-obese by two methods: 1) BMI ≥30 and 2) ICD-9 diagnosis codes used by National Inpatient Sample (278.0,278.00,278.01,278.03,649.10-14,793.91,V85.30-39,V85.41-45,V85.54). Complications within 90 days, transfusion requirements, length of stay and operative time were collected. The effect of obesity on various outcomes was separately analyzed for both BMI- and coding-based obesity.

Results: From 2004 to 2014, prevalence of BMI-based obesity increased from 54% to 63% and 40% to 45% in TKA and THA, respectively (Figure 1). Prevalence of coding-based obesity increased from 15% to 28% and 8% to 17% in TKA and THA, respectively. Coding overestimated the growth of obesity in TKA and THA by 8.4 and 5.6 times, respectively. When obesity was defined by coding, obesity was falsely shown to increase the risk of transfusion (TKA and THA), deep vein thrombosis (TKA), pulmonary embolism (THA) and longer hospital stay (TKA and THA) (Table 1).

Conclusions: Administrative databases might overestimate the growth of obesity due to improvements in coding over the years. Obesity defined by coding can overestimate the actual effect of obesity on complications after TJA. Therefore, studies using large databases should be interpreted with caution, especially when variables prone to coding errors are involved.

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