Validation of diagnostic codes for subtrochanteric, diaphyseal, and atypical femoral fractures using administrative claims data.

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Abstract
Administrative claims databases have large samples and high generalizability. They have been used to evaluate associations of atypical femoral fractures with bisphosphonates. We developed and assessed accuracy of claims-based algorithms with hospital and physician diagnosis codes for these fractures. Medical records and radiology reports of all adults admitted at University of Alabama at Birmingham Health System from 2004 to 2008 with International Classification of Diseases, Ninth Revision hospital discharges and surgeons' fracture repair codes for subtrochanteric femoral fractures and random sample of other femoral fractures were reviewed. We identified 137 persons with suspected subtrochanteric femoral fractures and randomly selected 50 persons with either suspected diaphyseal femoral fractures or hip fractures other than subtrochanteric and diaphyseal femoral fractures (typical hip fractures). Eleven patients had radiographic features indicative of atypical femoral fractures. The positive predictive value (PPV) of claims-based algorithms varied with primary or secondary positions on discharge diagnoses and the sources of diagnosis codes. The PPV for fractures ranged 69-89% for subtrochanteric femoral, 89-98% for diaphyseal femoral, and 85-98% for typical hip fractures. The PPV of administrative codes for defining a femoral...
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Fracture as atypical was low and imprecise. Claims-based algorithms combining hospital discharges with surgeon's diagnosis codes had high PPV to identify the site of subtrochanteric or diaphyseal femoral fractures vs typical hip fractures. However, claims-based data were not accurate in identifying atypical femoral fractures. These claims algorithms will be useful in future population-based observational studies to evaluate associations between osteoporosis medications and subtrochanteric and diaphyseal femoral fractures.