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The Effect of Weather on Orthopedic Injury Presentation to the Emergency Department

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Mentor: Aaron Barksdale

Program: Emergency Medicine

Type: Original Research

Background: Predicting patient flow and presentation in the emergency department (ED) is difficult. Chief complaints vary and often appear random from an anecdotal perspective. Prior studies attempting to correlate weather conditions with orthopedic injuries have been conflicting. The purpose of this study was to explore associations between weather patterns and orthopedic presentations to the UNMC ED.

Methods: Retrospective chart review was conducted at a tertiary academic hospital with 64,000 annual ED visits. Utilizing electronic medical records, all patients visiting the ED between 9/1/2012 to 4/30/2019 were included. ICD10 codes identified patients diagnosed with fractures of upper (distal forearm through wrist) and lower (proximal femur and hip) extremities. Daily weather patterns were obtained through the National Oceanic and Atmospheric Administration, specifically daily temperature, amount and type of precipitation (none, rain/melted snow, ice/snow). Logistic regression was used to determine if weather conditions were predictive of fractures. Results are displayed as odds ratios and 95% confidence intervals. P<0.05 was considered statistically significant.

Results: Over an 80-month period 373,409 patients were included, with 4,416 fractures identified. Overall, there was a statistically significant association between snow/ice and fractures (p<0.0001). Specifically, an increased risk of upper extremity fracture (OR 1.47, CI 1.28-1.69) and lower extremity fracture (OR 1.25, CI 1.02-1.53). The risk of upper extremity fracture further increased when snow/ice accumulation was > 3 inches (OR 2.64, CI 1.91-3.65). Rain/melted snow was not associated with increased fractures.
The Diagnostic Utility of a Myeloid Mutational Panel for Myelodysplastic Syndromes and Myelodysplastic/Myeloproliferative Neoplasms

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Mentor: Yuan Ji
Program: Pathology, Division of Hematopathology
Type: Original Research

Background: The diagnosis of myelodysplastic syndromes (MDS) and myelodysplastic/myeloproliferative neoplasms (MDS/MPN) is based on morphology and cytogenetics/FISH findings per 2017 WHO classification. With rare exceptions (e.g. SF3B1 mutations), somatic mutations have not been incorporated as diagnostic criteria. In this study we analyzed the utility of mutational analysis with a targeted 54-gene or 40-gene next generation sequencing (NGS) panel in diagnosis of MDS and MDS/MPN.

Methods: The clinicopathologic data and NGS results of patients with unexplained cytopenia with or without cytosis who underwent a bone marrow (BM) biopsy and had sequencing with either a 54 gene Trusight NPV /g23/g26/g8 /g23/g25/g8 34% /g22/g25/g8 /g24/g23/g8

PPV 88% 98% 98% 100% /g28/g25/g8 93% 93% 100% /g27/g25/g8

NPV 47% 46% 34% 36% 54%

Table 1. Diagnostic performance of mutations for MDS and MDS/MPN with different cutoffs.

Conclusion: A myeloid mutational panel provides additional evidence of clonality besides cytogenetics/FISH studies in diagnosis of cytopenia with or without cytosis, and ≥ 2 mutations with ≥ 10% VAF highly predicts MDS and MDS/MPN with a PPV of 100%.

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Coronary Artery Bypass Grafting Versus Percutaneous Coronary Intervention for Left Main Disease in Chronic Kidney Disease Patients

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Mentor: Andrew Goldsweig
Program: Internal Medicine, Division of Cardiovascular Disease
Type: Review/Meta-analysis

Background: Limited data exists on the optimal revascularization strategy for patients with left main coronary artery disease (LMCAD) and chronic kidney disease (CKD). We conducted this updated meta-analysis to compare the outcomes of coronary artery bypass graft (CABG) versus percutaneous coronary intervention (PCI) in this population.

Methods: Multiple electronic databases were searched for studies comparing CABG and PCI in CKD patients undergoing revascularization of LMCAD (> 50% diameter stenosis). CKD was defined as estimated glomerular filtration rate of < 60 ml/min/1.73 m2. Primary outcome of interest was long term major adverse cardiovascular and cerebral events (MACCE) which was a composite of cardiovascular death, myocardial infarction (MI), stroke and repeat revascularization. Other outcomes of interest

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