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Abstract Submission Form

Poster Title: Does Rickets Carry an Increased Risk of Osteomyelitis and Septic Arthritis? A Large Database Study

Authors: **Monish S. Lavu MHM, Chloe Van Dorn MPH, Lukas Bobak BS, Robert J. Burkhart MD, David C. Kaelber MD PhD MPH, R. Justin Mistovich MD MBA**

Presenter's Name: **Chloe Van Dorn**

Location of Laboratory: **MetroHealth Center for Clinical Informatics Research and Education MetroHealth Department of Orthopaedics**

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Introduction: Rickets, a pediatric condition resulting in defective bone mineralization and deformities, has seen a resurgence in recent years. Children with rickets are prone to fractures and skeletal deformities due to their impaired bone development and remodeling. While prior studies have linked trauma to musculoskeletal infections in general, the prevalence of septic arthritis and osteomyelitis in rickets patients remains unexplored. Limited case studies have reported the coexistence of rickets and bone and joint infections. Thus, this study aimed to investigate the prevalence of septic arthritis and osteomyelitis in rickets patients compared to a control group, hypothesizing an increased prevalence in rickets patients.

Methods: We performed a retrospective cohort study utilizing the TriNetX Analytics Network, a federated health research network that aggregates de-identified electronic health record data from over 92 million patients across the U.S. We queried pediatric patients with rickets, based on ICD-10-CM encounter diagnoses, additionally analyzing a subgroup without a history of orthopaedic procedures to control for surgical site infections. Patients in this group with any ICD-10-CM encounter diagnoses of osteomyelitis or septic arthritis were reported. We also established a control cohort to compare the prevalence in patients without rickets by calculating relative risks.

Results: Of 7,112 pediatric patients with rickets, 95 (1.34%, 95% CI: 1.07%-1.60%) had a history of osteomyelitis and 34 (0.48%, 95% CI: 0.32%-0.64%) had a history of septic arthritis. In comparison, of the 14,984,013 patients without rickets, 14,199 (0.10%, 95% CI: 0.09%- 0.10%) had a diagnosis of osteomyelitis and 6,925 (0.05%, 95% CI: 0.05%-0.05%) had a diagnosis of septic arthritis. The overall relative risk for osteomyelitis in pediatric patients with rickets was 14.10 (95% CI: 11.54-17.22), while the relative risk for septic arthritis was 10.30 (95% CI: 7.34-14.21). An increased risk for osteomyelitis and septic arthritis was still present even in the rickets subgroup without prior musculoskeletal surgery (relative risk 11.31 and 8.31, respectively).

Conclusion: Pediatric patients with rickets have over 10 times higher relative risks for developing osteomyelitis and septic arthritis compared to those without rickets. Further research should determine if modifications to diagnostic criteria are needed due to the significantly elevated relative risk.