Establishing The Role Of Inflammatory Markers In The Diagnosis And Treatment Of Acute Hand Infections In The Pediatric Population

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Background: Pediatric hand infections are complex clinical problems due to difficulty distinguishing infections of differing severity, presentation, and response to treatment.[1] Generally, superficial infections can be managed non-surgically with antibiotics, while deeper infections may necessitate surgical management and antibiotics. Inflammatory blood markers, including white blood cell (WBC) count, erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP) are reported to aid in determining severity of infection and response to treatment in adults.[2,3]

Purpose: The purpose was to identify the difference in inflammatory marker levels in pediatric patients with superficial vs. deep hand and wrist infections to determine the utility of markers in diagnosis and treatment.

Methods: This retrospective cohort study included pediatric patients who received treatment for an acute hand or wrist infection at two freestanding children's hospitals. Chart review for demographics, diagnosis, treatment, and cause of infection was conducted. Exclusion criteria included: patients >18 y/o, chronic infection, open fractures, no inflammatory markers measured.

Results: 129 patients met inclusion criteria. Logistic regression was used to assess predictive value of ESR, WBC, and CRP in treatment and diagnosis. Only intravenous (IV) antibiotic administration was associated with elevated inflammatory markers. Every 1 unit (mg/L) increase in CRP was associated with a 2.14 increased odds (95%CI: 1.09, 4.17) of being given IV antibiotics. Every 1 unit (cells/mm^3) increase in WBC was associated with a 1.26 increased odds (95%CI: 1.06, 1.50) of being given IV antibiotics. Every 1

unit increase in WBC was associated with a 1.14 increased odds (95%CI: 1.02, 1.27) of a cellulitis diagnosis. ESR and CRP were not significantly associated with cellulitis diagnosis.

Conclusion: Pediatric hand infections are complex problems and inflammatory blood markers can be a useful tool for aiding in diagnosis and management, particularly in determining need for IV antibiotics and for diagnosis of cellulitis.

Significance: Clinicians may use inflammatory markers to aid in treatment of pediatric hand and wrist infections.

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