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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.

Inflammatory blood markers (WBC, CRP, and ESR) are reported to aid in determining severity of infection and response to treatment in adults.

PURPOSE

Identify differences in inflammatory blood marker levels in pediatric patients with superficial vs. deep hand/wrist infections to determine the utility of markers in diagnosis and treatment.

METHOD

Retrospective cohort study including pediatric patients who received treatment for an acute hand or wrist infection.

Exclusion criteria included: patients >18 y/o, chronic infection, open fractures, no inflammatory markers measured.

STATISTICAL METHODS

Logistic regression was used to assess predictive value of ESR, WBC, and CRP in treatment and diagnosis.

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RESULTS

Table 1: Difference In Inflammatory Markers Between Deep & Superficial Hand Infections

Lab	Deep Infection N=36	Superficial Infection N=75	Difference (95%CI)	p Value
CRP	5.1 (13.7)	2.5 (3.7)	2.6 (-2.1, 7.4)	0.2636
ESR	24.8 (25.7)	14.5 (10.1)	10.3 (0.5, 20.0)	0.0399*
WBC	12.1 (6.4)	11.4 (5.0)	0.6 (-1.7, 3.0)	0.6052

Table 1: ESR was significantly higher in the deep infection compared to superficial infection. CRP and WBC were not significantly different. Deep infections included osteomyelitis, tenosynovitis, and abscesses. Superficial infections included paronychia, cellulitis, and felons.

Table 2: Difference In Inflammatory Markers Between Patients Who Were Pretreated With Antibiotics At An Outside Hospital Prior To Definitive Management And Patients Who Were Not

Lab	No Pretreatment With Antibiotics	Pretreated With Antibiotics	Difference (95%CI)	p Value
CRP	3.1 (9.6)	4.1 (5.8)	-1.0 (-4.0, 2.0)	0.5123
ESR	17.4 (17.7)	20.7 (18.6)	-3.3 (-11.8, 5.3)	0.4421
WBC	12.1 (5.8)	10.4 (4.4)	1.7 (-0.3, 3.7)	0.0938

Table 2: No significant differences were found between inflammatory markers in those patients who were treated with antibiotics at an outside facility prior to definitive management and those who were not.

Table 3: Association Between Lab Parameters And Definitive Management

Lab	Operative Management	Bedside Procedure	Oral Antibiotics	p Value
CRP	3.1 (4.6)	1.9 (2.0)	4.4 (11.9)	0.6481
ESR	14.7 (11.3)	16.8 (8.4)	19.8 (21.2)	0.6560
WBC	12.9 (9.1)	10.9 (4.4)	11.0 (5.4)	0.6245

Table 3: No significant associations were found between lab values at time of presentation and the ultimate definitive management for the infection.

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RESULTS

ESR is the marker most predictive of a deep as opposed to superficial hand infection

Inflammatory markers do not change significantly if patient received treatment with antibiotics prior to definitive management

Clinicians may use ESR to evaluate severity of pediatric hand and wrist infections but should defer to clinical judgement for course of treatment.

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