Section: Plastic Surgery

Original Research Article

TO IDENTIFY THE FACTORS AND COMPLICATIONS OF ACUTE HAND INFECTION AND TREATMENT MODALITIES

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ABSTRACT

Background: Hand infections are frequently encountered in clinical practice and may involve structures such as flexor tendon sheaths, bite-related wounds, interdigital spaces, subcutaneous tissues, nail folds, joints, bone, and skin. If these infections extend to deeper tissues or cause structural damage, surgical management may be required. Recent literature reports a significant rise in methicillin-resistant infections of the hand over the past two decades. The purpose of this study is to evaluate the causative factors, clinical complications, and therapeutic approaches associated with acute hand infections

Materials and Methods: Study design is an observational study. This study was conducted at Liaquat University Hospital Hyderabad / Jamshoro from September 2024 to September 2025. This study is a prospective observational study which was conducted on the patients who were presented with hand infection. All age group patients were a part of this study. Demographic data of the patients along with type of infection and duration of the infection was gathered. The outcomes that were assessed in this study are the following: type of infection, etiological factors, type of treatment, and common microorganisms.

Results: There were a total of 80 patients included in this study. All of the patients were presented with hand infection. The majority of the participants were males, representing 72.5% of the total population. The majority of the participants (26.25%) who were infected with hand infection were gardeners/farmers by occupation. 70% of the participants had a penetrating injury. The majority of the participants were adults from the age group of 21 to 30 years and 41 to 50 years.

Conclusion: It is important to diagnose hand infections early so that it would reduce the risk of partial or total hand amputation.

Keywords: infections of the hand, skeletal damage or underlying deep soft tissue.

INTRODUCTION

One of the most common infections that are reported by surgeons and physicians are infections of the hand.[1-3] There are a number of common hand infections. Some of them are the following: flexor tenosynovitis, bite wounds, webspace/midpalmer infection, subcutaneous infection, paronychia (felon), septic arthritis, osteomyelitis, and cellulitis.[4,5] These hand infections are frequently encountered by orthopedic surgeons and primary care physicians. If such infections are diagnosed late or they are treated inappropriately, it can lead to mortality and morbidity for the patients.[6,7]

When the infections lead to skeletal damage or underlying deep soft tissue, they need surgical

intervention.[8] When tissue is damaged due to the infection, it is thought to be an excessive host innate immunological reaction. The traditional surgical method for the infections is drainage and decompression.[9]. However, nowadays the focus has shifted to early diagnosis and using conservative protocols for medicinal treatment. This knowledge provides practical implications.[10] According to Bridget et al., infections of the hand with MRSA have rapidly increased during the last 20 years.[11]

MATERIALS AND METHODS

This study is a prospective observational study which was conducted on the patients who were presented with hand infection. All age group patients were a part of this study. Patients who were non-compliant were not a part of this study. Demographic data of the patients along with type of infection and duration of the infection was gathered. The outcomes that were assessed in this study are the following: type of infection, etiological factors, type of treatment, and common microorganisms. The complications were also noted. Patients were informed about this study and their consent was obtained. The Ethical Review Committee approved this research.

RESULTS

There were a total of 80 patients included in this study. All of the patients were presented with hand infection. The majority of the participants were males, representing 72.5% of the total population. [Table 1] shows the demographic and clinical parameters of the study.

Table 1

Parameters	N	%
Gender		
Female	22	27.50
Male	58	72.50
Occupation		
Children/Student	16	20.00
Construction worker	8	10.00
Gardner/Farmer	21	26.25
Shepherd	7	8.75
Housewife/Maid	13	16.25
Driver	5	6.25
Painter	1	1.25
Sweeper	1	1.25
Cement factory worker	1	1.25
Doctor	1	1.25
Policeman	6	7.50
Mechanism of injury		
Penetrating injury	56	70.00
Human bite	1	1.25
No history of penetrating or blunt trauma	18	22.50
Blunt - hammer	2	2.50
Cat-bite	2	2.50
Burn	1	1.25
Hand dominance		
RHD	80	100.00
LHD	0	0.00
Duration		
<10 days	37	46.25
10 to 19 days	10	12.50
20 days or more	33	41.25
Risk factors		
Occupation	37	46.25
Diabetes mellitus	18	22.50
Smoking	18	22.50
HTN	7	8.75

The majority of the participants were adults. [Table 2] shows the distribution of patients according to the age groups.

Table 2

Age Group (yrs)	N	%
0 to 10	3	3.75
11 to 20	9	11.25
21 to 30	22	27.50
31 to 40	14	17.50
41 to 50	22	27.50
51 to 60	3	3.75
61 to 70	3	3.75
71 to 80	4	5.00

[Table 3] shows the diagnosis and treatment of the hand infection.

Table 3

Parameters	N	%
Diagnosis		
Midpalmer/Thenarabscess	5	6.25
Web space infection	12	15.00
Subcutaneous	33	41.25
Flexor Tenosynovitis	7	8.75
Acute paronychia	14	17.50
Pulp space (Felon)	9	11.25
Treatment		
Incision and drainage	48	60.00
Conservative	21	26.25
Amputation	11	13.75

DISCUSSION

Hand infections have many different types according to their site of infection and etiology.[12] If such infections are diagnosed late or they are treated inappropriately, it can lead to mortality and morbidity for the patients. Some infections which are superficial can be treated by using conservative treatment. However, some deep infections require surgical treatment along with medical treatment. These infections include the involvement of tendons and their bone, joint, or sheaths or deep spaces of the hand.[13]

In our study, the most common cause of hand infection was observed as penetrating trauma. This is similar to other studies as well.[14] Other studies found that the second most common cause of hand infection was human bite wounds.[15,16] However, our study found that the second most common cause of hand infection is no history of penetrating or blunt trauma. It might be because of underlying comorbidities as it is common to find patients with more than one comorbidities. These patients might be taking some medicines such as anticoagulants with the background history of hypertension. The patients who are taking anticoagulants having a hand infection lead to the bleeding and formation of hematoma of the site of either penetrating injury or blunt.[17]

In our study, patients required either total or partial hand amputation because osteomyelitis/septic arthritis was developed and they were having long-standing uncontrolled diabetes mellitus. 2 patients underwent partial and total hand amputation. The 3rd patient underwent partial amputation of the hand. There was a study conducted on small septic joints of the hands which included 110 patients.[18] All of the participants had irrigation, incision, and debridement of the joints. 83 participants were treated successfully and 27 required either amputation or arthrodesis.

There were other less common and severe infections such as flexor tenosynovitis and necrotizing fasciitis noted in our study. They need urgent attention for their diagnosis and surgical and medical management. If there would be a delay, it can lead to permanent functional deficits.[19] There was a 10-year long study conducted which observed that MRSA was the most common bacteria in hand infection.[20]

CONCLUSION

It is important to diagnose hand infections early so that it would reduce the risk of partial or total hand amputation.

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