A Clinico - Epidemiological Study of Acute Pyogenic Hand Infections – Retrospective Study of 50 Cases

Authors

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Introduction

The importance of hand in human life is unimaginable. From an evolutionary aspect, our hands were relieved from duties of locomotion when we became bipeds. Many of our mental processes are developed by feeling and movements of hand. The hand is composed of tough material together with a machinery of much refinement and tissues of great delicacy and specialization. The hand infiltrated and gutted by infections create several problems. After the tissues have sloughed out and the storm of infection is over, all the tissues contract and movable parts become bound with a cicatrix. Much of this complications can be prevented by early treatment of infection. As anywhere else, prevention is better than reconstruction of a frozen hand which requires specialized technique, place and person.

Materials and Methods

The aim of the study was to know the pattern of acute pyogenic hand infection in relation to age, sex, etiology, occupation, type of treatment and complication if any.

This retrospective study was done at caritas hospital, Kottayam Kerala from 1-1-2008 to 3-12-2010 by reviewing the case files. The present study consists of 50 cases of acute pyogenic infection. All were treated either by conservative treatment or by incision and drainage.

Observations

The study of 50 cases of acute pyogenic hand infections were carried out. The results are analyzed in a tabulated form.

Table 1: Symptoms and Sign

| Symptoms and Sign | No. of cases | Percentage |
|-------------------|-------------|------------|
| Pain              | 50          | 100%       |
| Swelling          | 50          | 100%       |
| Fever             | 20          | 40%        |
| H/O Trauma        | 18          | 36%        |
| Local rise of temp| 50          | 100%       |
| Tenderness        | 50          | 100%       |
| Dorsal oedema     | 31          | 62%        |
| Pus discharge     | 10          | 20%        |
| Regional adenitis | 03          | 6%         |
| Diabetes mellitus | 04          | 8%         |
| Vascular insufficiency | 01 | 2%        |

Table 2: Duration of Symptoms

| Duration of Symptoms in days | No. of cases | Percentage |
|-----------------------------|-------------|------------|
| 1-3 days                    | 30          | 60%        |
| 4-7 days                    | 18          | 36%        |
| 8-10 days                   | 02          | 04%        |
### Table 3: Sex distribution

| Sex   | No. of cases | Percentage |
|-------|--------------|------------|
| Male  | 28           | 66%        |
| Female| 22           | 44%        |

### Table 4: Age of the patients

| Age of the patients | No. of cases | Percentage |
|---------------------|--------------|------------|
| 00-10               | 08           | 16%        |
| 11-20               | 13           | 26%        |
| 21-30               | 10           | 20%        |
| 31-40               | 11           | 22%        |
| 41-50               | 03           | 06%        |
| 51-60               | 04           | 08%        |
| 61-70               | 01           | 02%        |

### Table 5: Occupations of the patients

| Occupations of the patients | No. of cases | Percentage |
|------------------------------|--------------|------------|
| Manual laborer               | 14           | 28%        |
| Factory work                 | 12           | 24%        |
| House work                   | 14           | 28%        |
| Study                        | 08           | 16%        |
| Pan business                 | 02           | 04%        |

### Table 6: Site of infection

| Site of infection            | No. of cases | Percentage |
|------------------------------|--------------|------------|
| Terminal pulp space          | 10           | 20%        |
| Middle volar space           | 07           | 14%        |
| Proximal volar space         | 01           | 02%        |
| Web space                    | 10           | 20%        |
| Subcuticular                 | 01           | 02%        |
| Thenar space                 | 04           | 08%        |
| Deep palmar space            | 02           | 04%        |
| Radial bursa                 | 01           | 02%        |
| A/C Paronychia               | 01           | 02%        |
| Dorsal subcutaneous          | 02           | 04%        |
| Cellulitis                   | 04           | 08%        |
| combined                     | 07           | 14%        |

### Table 7: Single/Combination Antibiotics

| Antibiotics     | Number of patients |
|-----------------|--------------------|
| Single          | 06                 |
| Combination     | 44                 |

### Table 8: Complications:

| Complications                              | No. of cases | Percentage |
|--------------------------------------------|--------------|------------|
| No complications                           | 43           | 86%        |
| Recurrence                                 | 02           | 04%        |
| Restriction of movement after 1 month      | 03           | 06%        |
| Osteomyelitis of terminal phalanx          | 02           | 04%        |

### Discussion

Hand infections and injury are getting more and more importance, because of the utmost importance of hand in all fine work. Maintenance of the normal movement and normal sensation is the basic aim behind changes in treatment methods of hand infection. The anatomy of hand plays a crucial role in planning the treatment of hand infections.

In Russia\(^{19}\) approximately 20% surgical outpatient report with disability of the hand with 25% of this are due to paronychia.

In the present study 50 cases of acute pyogenic infection of hand are included. The chronic infection and post-operative infection were excluded from the study.

All the patients under study presented with pain, swelling, local rise of temperature and tenderness. 31 patients had dorsal oedema explained by the fact that all lymphatics of hand transverse through the dorsum and dorsal skin is lax\(^{[3,11]}\).

Infection is introduced into hand compartments by direct injury and spread from other compartments. In this study the history of trauma was elicitable positively in only 36% of patients, probably because majority of the patients are manual laborer and housewives who are likely to neglect trivial trauma, which may be sufficient to cause an infection. Four patients had diabetes mellitus 2% had vascular in suffering due to raynods all of which are known risk factors\(^{[18]}\). The duration of symptoms was less than 4 days in 30 out of 50 patients. This is because the pus present under tension in the localized spaces of the hand produces severe early local symptoms\(^{[16]}\). In our study there is no remarkable difference in incidence of hand infections in males and females. This might be because, majority of females are laborer or house workers, predisposing them to trauma and infections. Regarding the age incidence 26% of patient were from 11-20 years and 20% of 21-30 years age group accommodating roughly 50 % of patients under study.

Manual laborer, factory worker and house wives contribute the 75% of the patients proving trauma is an important etiological agent. Regarding the site of infection 36% of patient had finger infection and web space infection in 20% of patients. Some finding is noted by micheal R.\(^{[18]}\).
Acute paronychia although noted by some as a very common infection of the hand was found only in 2% of the present series, as majority of these patients are treated with surgery in outpatient department, which this study has not included. According to Micheal R. the organisms are the descending order, staphylococcus aureus, methicillin resistant staphylococcus, streptococci, gram negative bacteria and anaerobes which vary with site of infection and mode of injury.

Of the 50 patients under study 46 needed surgical intervention, 4 patients were treated conservatively (of cellulitis) with high doses of crystalline penicillin and cloxacillin). It is well known that conservative treatment will effect a cure only in a few cases and under specific condition. Such success is unlikely if the patient presents after 48 hours of onset of infection because of certain anatomical peculiarity of hand and blood supply. Recurrence in two patients were due to inadequate drainage at the time of primary operation, 3 patients had restriction of movement at the end of 1-month follow-up. They were subjected to active physiotherapy by the specialist, and 95% of mobility was regained.

Summary and Conclusion
This study involve 50 cases of acute pyogenic hand infections admitted caritas hospital from January 2008 to December 2010.
1) The incidence of hand infection is higher in the age group 11-30 years.
2) The male population is affected more than the females.
3) The most common affected area is fingers, followed by web spaces. Deep space infections are comparatively rare.
4) The commonest microorganism responsible is staphylococcus aureus, followed by streptococcus.
5) Manual laborer and house wives are more affected.

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