

Unilateral Osteomyelitis of the Clavicle in Childhood: A Case Report



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Abstract

Infection of clavicle is a rare complication in children that is difficult to diagnose. The exact incidence is unknown. We report a case of osteomyelitis of the clavicle without any long term disability.

Keywords: Clavicular osteomyelitis, Childhood

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Introduction

The term osteomyelitis denotes inflammation of bone and marrow but generally implies the presence of infection. Microorganisms can be introduced into the bone in 3 ways: (1) by direct inoculation, trauma or surgery; (2) local invasion from contiguous focus of infection; and (3) by hematogenous delivery. In children, bone infection is generally from blood source and occurs in long tubular bones. Infection of clavicle bone is very rare. Microorganisms reach to clavicle via the blood stream or trauma. In adults, osteomyelitis of clavicle is secondary to open fractures, surgery or neighborhood infective tissue.¹⁻³ We report a case of a 4-year old boy without any previous underlying disorder. Magnetic resonance imaging (MRI) images showed infection of the clavicle in the lateral 1/3 of the bone. After surgical debridement and simultaneous consumption of adequate antibiotics, signs and symptoms were diminished. Presently, the child shows complete improvement.

Case Report

We report the case of a 4-year old boy with fever and a painful firm nonmobile mass in lateral 1/3 of right clavicle. He did not have any immunodeficiency disorder or history of trauma. Cardiovascular system was normal. Blood culture was positive for *Staphylococcus aureus*. Wright test and 2ME were negative.

The blood test showed 14500/L leucocytes (90% PMN), hematocrit 33,1%, 574000/L platelets, 2+ C-reactive protein (CRP) and 30 mm/1st h erythrocyte sedimentation rate (ESR). The x-ray showed destructive changes in right clavicle (Figure 1). MRI images were compatible with clavicular osteomyelitis (Figure 2).

Surgical debridement and excisional biopsy was performed. Pathologic examination was compatible with acute osteomyelitis (Figure 3A and 3B).

During hospitalization, clindamycin and cloxacillin (IV) were used for 2 weeks, and finally oral clindamycin was administrated for 6 weeks more. In outpatient follow up examination, he showed complete improvement.

Discussion

Infection of the clavicle is not common. It is a very rare infection in a healthy child. Infection is caused by hematogenous spread or trauma. The incidence in males is more than that in females and patients have chest (78%) and shoulder pain (24%) respectively.¹⁻³

In adults, factors such as intravenous drug use (21%), a distant site infection (15%), diabetes mellitus (13%), trauma, subclavian venous catheterization,



Figure 1. Destructive lesion in right clavicle due to acute osteomyelitis.

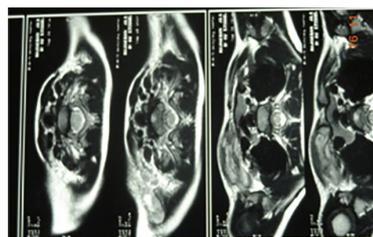


Figure 2. MRI signal changes in right clavicle secondary to acute osteomyelitis

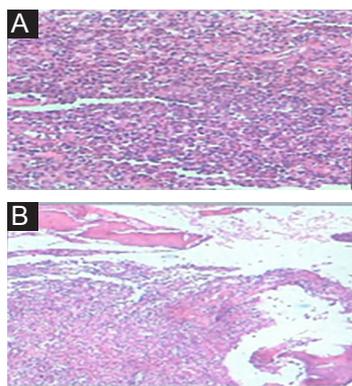


Figure 3. (A) Extinction Biopsy: Pathology Shows Acute Osteomyelitis. (B) Extinction Biopsy: Pathology Shows Acute Osteomyelitis.

and rheumatoid diseases can develop infection of the clavicle,^{3,5,6} but in 23% of the case reports, there is no risk factor.^{5,7}

Everyone must exclude diagnoses such as chronic recurrent multifocal osteomyelitis, neoplasia, rheumatoid arthritis, and chronic multifocal periosteitis.^{6,8}

The diagnosis of osteomyelitis generally is suspected based on the presence of fever, focal skeletal pain, warmth, swelling a limb, or refusal to use an extremity. The diagnosis is confirmed by the identification of an organism by culture or gram staining in a bone aspiration or by histopathologic evidence of inflammation in surgical specimens of bone. In an otherwise healthy individual, the diagnosis is probable when a patient has fever, leukocytosis, elevated acute phase reactants (elevated CRP or ESR) or a positive blood culture plus one or more of the followings: abnormal result of MRI or CT scan, scintigraphy or physical finding consistent with osteomyelitis.¹

The most common pathogen in infection of the clavicle is *S. aureus*.^{1,2,4,5}

A periosteal reaction, a sclerotic, lytic or mixed pattern can be seen secondary to the infection in the clavicle. Sequestrum formation in osteomyelitis of clavicle is uncommon in childhood, however it can be developed in later stages of the disease.^{5,9}

Medical treatment is the first selected treatment and antibiotics are used most effectively against methicillin-resistant *S. aureus* (MRSA).^{1,2,5}

Complications of osteomyelitis of clavicle are mediastinitis and retrosternal abscess. And surgical management such as debridement and myoplasty may be done.^{5,10} Uncommon complications of infection of the clavicle are septic shock and superior vena cava syndrome.^{5,9}

Conclusion

Infection of the clavicle is very infrequent in children. The features necessary to confirm osteomyelitis at this site in children are as follows:

- A clinical picture of acute inflammation (pain, swelling, erythema, and heat);

- Elevated inflammatory markers;
- Radiological features of an infectious or inflammatory process (expansion, loss of normal trabecular pattern, lucency and/or sclerosis, and periosteal reaction);
- Rapid improvement in symptoms (1-2 weeks) with appropriate antimicrobial therapy. Cutaneous aspiration of clavicle can help us in some cases to notify net diagnoses and choose antibiotic.² Clinical suspicion and early effective treatment can prevent long-term side effects.

Authors' Contributions

RA: the study design, AH: management and supervision, KP: provided advice, OS: provided advice, NE: read and arranged the final manuscript, SN: photography.

Ethical Approval

Written informed consent was obtained from the parents of patient for participation in the study.

Conflict of Interest Disclosures

The authors declare that they have no conflict of interests.

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