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Case Report

A Case of Lyme Disease with Facial Palsy-History Plays an Important Role

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Abstract

Lyme disease is an infectious disease caused by the bite from blacklegged tick infected with *Borrelia burgdorferi* or *Borrelia mayonii* bacteria [1]. In this case, we present a 5 year old female child from Germany who represented with erythematous rash on scalp and face, followed by unilateral facial palsy. In this report, we want to emphasize the importance of careful listening to parents and keeping Lyme disease in mind while diagnosing a child with skin rash and facial palsy.

Keywords: *Lyme Disease; Tick; Skin Rash; Borrelia burgdorferi; Erythema Migrans; Facial Palsy*

Introduction

Lyme disease is zoonotic disease caused by *Spirochetes* of the *Borrelia* species and transmitted to human by Ixodes ticks [2].

Cases of Lyme disease have been reported in nearly all states in the U.S. and in large areas in Europe and Asia. But the most common areas are the Northeast, upper Midwest, and northwestern states [3].

As per CDC about 30,000 cases are reported annually in USA. In Germany incidence is about 37.2 per 100,000 person-years. Lyme disease is endemic in all German federal states [8].

In UAE its incidence is unknown but few cases have been reported. In India Arunachal Pradesh and Sikkim are considered endemic [4].

Lyme disease has spread all around the world due to population movements.

Research indicates that approximately 5% of the patients diagnosed with Lyme disease experience some form of facial weakness on one or both sides.

This child presented with typical erythema chronicum migrans without fever and unilateral facial palsy.

Case History

A 5 year old girl from Germany visited Dubai with complains of painless reddish macular lesion over the scalp and neck and extending to one side of face. On May 18th, 2025 in Germany, a macular erythematous rash was noticed on the occiput and nape of neck, by 19th may it

extended behind the right ear, it was diagnosed as contact dermatitis and was treated with topical steroid cream. In next 3 to 4 days skin lesion moved to right side of face, neck and right shoulder. Child visited the doctor again and was advised to follow the same treatment. Meanwhile child was becoming less playful, more irritable and had less appetite, and rash would appear and disappear in different parts of face and scalp and shoulder, and by 1st June, 2025 child visited Dubai, by the 4th June scalp was very dry and even slight touch would lead to severe pain. By 6th June 2025, mother noticed less movement on right side of the face. Mother visited me with her own research with possibility of Lyme disease. Clinical history and progression matched typically with Lyme disease. Child was investigated for Lyme disease. On admission child had mild fever for which paracetamol was given. Serum levels of Lyme *Borrelia burgdorferi* IgG antibody (7.013; negative < 0.9) and IgM antibody (2.468; negative < 0.9) were found to be raised. Other routine investigations like CBC were found to be normal. Child was given doxycycline for 3 weeks. Clinical features improved over the period of next few weeks. Skin lesions and facial palsy resolved completely without any residue. Western blot test was not done.

Figure 1: *Erythema migrans in the patient.*

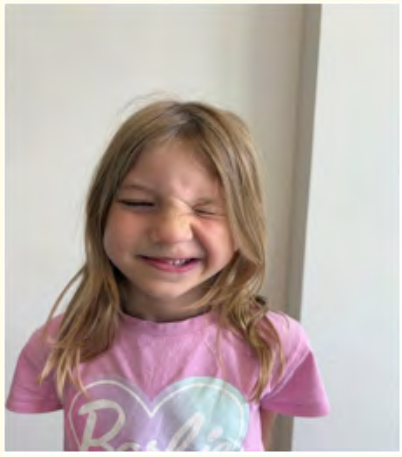

Figure 2: *Right side facial palsy.*

Figure 3: *Complete recovery of facial palsy and erythema migrans.*

Discussion

Lyme disease is caused by pathogenic genospecies of *B. burgdorferi sensu lato* (comprising of atleast 20 pathogenic and nonpathogenic genospecies); *sensu stricto*, *afzelli, garinii, bavariensis* and *spielmanni* [5]. Normally found in temperate regions but has spread now to almost all the continents. Disease spreads by the bite of *Ixodes* genus tick.

Skin is most commonly affected organ and manifestations are known as "dermatoborreliosis".

Disease is divided into 3 stages: 1. Early localized, 2. Disseminated, 3. Chronic.

Early disease is recognized by isolated erythema migrans which occurs at the site of tick bite and start 1 to 30 days after bite. It may be asymptomatic or can have itching or burning sensation. 20% patients can have multiple episodes of erythema migrans. Although tick related infectious diseases result in characteristic skin lesions, erythema migrans is unique to Lyme disease [6].

It can take 2 courses: a) expansion with various hues of erythema OR b) spread with central clearing with bull's eye lesion. Sometime atypical presentation like vesicles, erythematous papules, purpura or lymphangitis streaks can appear. Approximately one third patients with erythema migrans may not develop any further manifestation of Lyme disease.

Differential diagnosis at this stage can be - tinea corporis, urticaria, erythema multiforme, erythema annulare centrifugal and fixed drug eruption.

Stage 2 develops 3 to 10 weeks after inoculation. Systemic manifestation may include fever, malaise. One or more systems can be involved at this stage. Musculoskeletal (intermittent inflammatory arthritis) and neurologic (cranial neuropathies; Bell's palsy in up to 3 to 5 % cases) symptoms are more common, cardiac symptoms (carditis) are less common.

Stage 3 Lyme disease- occurs months to years after the initial infection. Signs and symptoms are mainly rheumatologic and neurologic.

Large joint arthritis is hallmark of stage 3 Lyme disease.

Diagnosis is mainly clinical and laboratory investigations aid in diagnosis. Culture (expensive and less sensitive), PCR from skin biopsy can help in uncertain cases or with atypical presentations. Commonly used test is serology immunoglobulin level. It is considered essential in all cases of suspected Lyme disease but not in erythema migrans cases.

Treatment is use of doxycycline (4 mg/kg/day for 2 weeks or more, maximum 200 mg per day). Other alternatives such as amoxicillin and cefuroxime are equally effective. Disseminated disease requires parental treatment with ceftriaxone, cefotaxim or benzyl penicillin [7].

Conclusion

Cases of Lyme disease are not common in UAE region. But careful review of clinical history and history of visit to endemic area plays a significant role in early diagnosis, treatment and thus, preventing the morbidity. Identifying early cutaneous features and careful listening to parents has a key role and is helpful to prevent advancement of symptoms. We need to make strategy for general public and physician awareness.

Conflicts of Interest

There is no conflict of interest.

Permission

Permission was taken from the parents before the use of pictures.

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