An Unusual Presentation of Lyme Disease: A Case Report

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Abstract

We present this case of a 67-year-old female with a background of Type 2 Diabetes Mellitus and Hypercholesterolaemia, who presented with a one day history of acute confusion, a facial rash, one episode of urinary incontinence, a fever and sweating. On examination there was an erythematous rash on both cheeks and across the nose, which later became crusted and well demarcated. The vital signs showed she had a fever, the remaining signs were normal. The white cell count was 16 x10^9/L and CRP 11 mg/L. An auto-antibody screen, CSF microbiology and culture sample and viral CSF PCR screen were unremarkable. On further history taking it was noted that she spent a considerable amount of time in the garden, and that three weeks ago she was bitten by a tick on the face whilst in the garden. Her relative had also had a left leg tick bite from the same garden, which resulted in a rash which resolved following treatment with Doxycycline. A diagnosis of Lyme Disease was made, and her symptoms improved with a course of Doxycycline. This case presentation highlights the variability in which patients with Lyme disease can present, leading to diagnostic complexity, and how history taking was key to reaching a diagnosis.

Keywords: Lyme Disease, Antibiotics, Facial Rash.

Case Description

A 67-year-old female with a background of Type 2 Diabetes Mellitus and Hypercholesterolaemia presented to the Emergency Department with a one day history of acute confusion, a facial rash, one episode of urinary incontinence, a fever and sweating. A relative provided further information that the patient was normally fully independent and self caring, however in the last 24 hours had confused speech and was unable to recall any details from the previous day. The relative also mentioned that three weeks ago the patient had been bitten on the face but had no rash. A few weeks ago she had been treated for a right ear infection with antibiotics from the GP which had resolved. She had no respiratory symptoms and nil other urinary symptoms asides from a single episode of urinary incontinence. She had normal bowel movements. She had no recent travel abroad.

On examination there was no obvious source of infection identified. The facial rash was flat and erythematous, affecting the cheeks and bridge of the nose (Figure 1). The vital signs showed she had a fever (temperature over 38 degrees Celsius), the remaining signs were normal.

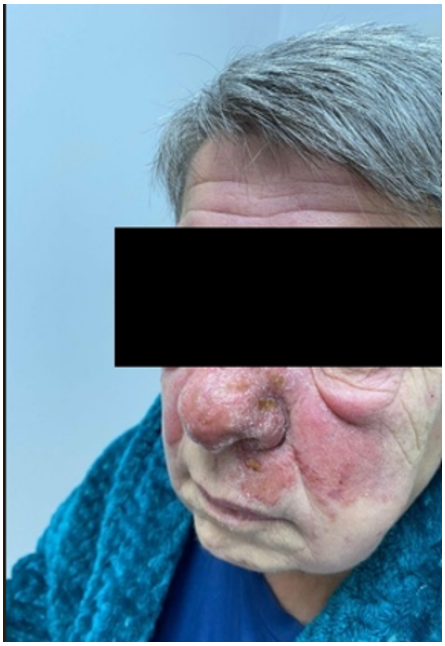

Figure 1: At Presentation.

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Investigations and Intial Management

The white cell count was 16 x10^9/L and CRP 11 mg/L. She had a CT head scan which showed no acute pathology which could explain her symptoms. She also had an infection screen including a chest x-ray, urine sample and blood cultures which showed no evidence of infection.

A lumbar puncture was completed; the CSF glucose, lactate and protein were unremarkable. The CSF microbiology and cytology, and viral PCR screen were unremarkable. She was started on treatment of IV Aciclovir, whilst the viral CSF PCR screen was pending, which was stopped when the results were negative. She was also given IV broad spectrum antibiotics following a discussion with Microbiology.

The patient was referred to the Dermatology team, who noted that the erythematous facial rash was associated with thickened skin on the nose and was non-tender but felt tight. The patient denied muscle weakness and hair loss. The Rheumatology team gave input and advised for an ESR and complement level blood tests. The ESR and complement levels were unremarkable. A Vasculitis and auto-antibody screen were completed, and this was also negative.

The Neurology team reviewed the patient and advised for Autoimmune Encephalitis screen blood tests and an MRI head scan. Both these tests showed no evidence suggestive of Encephalitis.

Differential Diagnoses and Clinical Reasoning

The differential diagnoses in this case were initially, Encephalitis, Systemic Lupus Erythematosus, Dermatomyositis and Rhinophyma.

Meningitis and Encephalitis can present with acute confusion and fever.[1] The lumbar puncture and auto-immune encephalitis blood test results were helpful in ruling Meningitis and Encephalitis out.[2]

The facial rash was not a classic butterfly 'malar' rash, as it did cross the nasolabial folds, and with a normal ESR, complement levels and auto-antibody levels, and lack of systemic symptoms (for example shortness of breath and joint pains), Systemic Lupus Erythematosus was deemed unlikely.[3] Dermatomyositis was also ruled out, as the patient did not present with a heliotrope rash or Gottron papules, and had normal auto-antibody tests with no history of weakness or muscle aches.[4]

Rhinophyma can present with erythema and thickening of the skin around the nose, however the clinical picture suggests an acute onset of the facial rash and was associated with acute confusion and fever, which would not be explained by this diagnosis.[5]

Clinical Progression

The patient was clinically stable and apyrexial, however remained confused. The facial rash over the course of 5 days had begun to weep and become crusted (Figure 2), and the erythema on the cheeks had become more pronounced (Figure c).

A further collateral history was obtained from the patient's relatives, as it was noted in the medical documentation that the patient had a bite on the face. The patient's relatives confirmed that around three weeks ago the patient had been bitten by a tick on the face, near the left aspect of the nasal bridge, whilst in the garden. There was no facial rash until the day of admission into hospital. Around one month ago, another of the patient's relative had been gardening in the same garden and had been bitten on the left leg by a tick which resulted in a rash, they were seen in hospital and told they had Lyme disease and were given a three-week course of an antibiotic called Doxycycline.

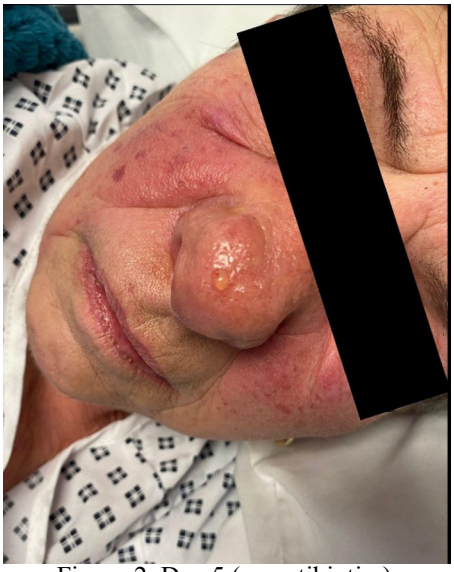

Figure 2: Day 5 (on antibiotics).

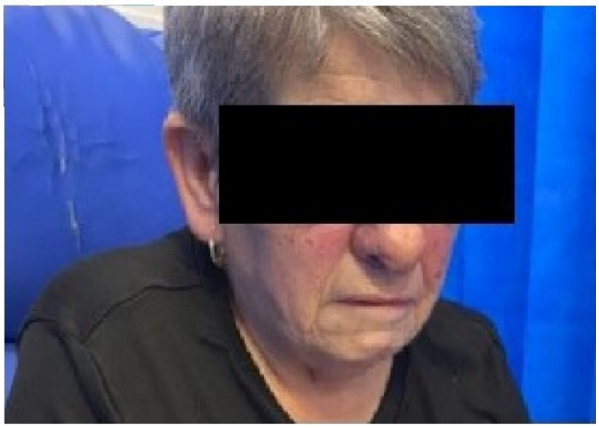

Figure 3: Post Treatment.

New Differential Diagnoses and Management

Following the additional information from the collateral history, the differential diagnoses pointed towards Lyme Disease. The history highlighted that the patient had been bitten by a tick on the face three weeks ago, with a delayed onset of a rash and confusion. There was also useful information that a relative had been treated for Lyme Disease following a tick bite in the same garden, around the same time. The patient was given a three-week

course of Doxycycline, and the Lyme disease ELISA test (enzyme-linked immunosorbent assay) was sent. The ELISA test was repeated after six weeks and came back as negative. The patient's facial rash and confusion resolved with the antibiotic treatment.

Discussion

Lyme Disease is an infection transmitted to humans through a bite from a tick, where the tick has been infected by the bacteria Borrelia burgdorferi.[4,5] Ticks are generally found in areas such as parks, woodlands and grassy areas.[4]

Lyme Disease classically presents with an erythema migrans rash (which has a 'bulls-eye' appearance) around 1-2 weeks following a bite (however can be visible from day 1 after a bite, to day 36).[6] Other less common symptoms and signs of Lyme Disease may be useful in cases where the classic presentation of erythema migrans may not be present, these include - cognitive impairment, tiredness, fevers, sweating, joint and muscle aches, neck pain, paraesthesia and swollen glands.[6,7] It is important whilst history taking in suspected cases of Lyme Disease to determine if there is a history of tick exposure.[4]

This case highlights the importance of awareness of the less common symptoms of Lyme Disease and the diagnostic complexity it can present. Guidance recommends that Lyme Disease serological testing should be completed if there is a suspicion of Lyme Disease without erythema migrans to guide diagnosis, and if there is a high clinical suspicion of Lyme Disease antibiotics should be given.[4,6] In this case, despite the negative Lyme Disease ELISA tests, there was a high degree of clinical suspicion of Lyme Disease due to the symptom onset around three weeks post tick bite, the location of the rash and the accompanying symptoms, also the patient's symptoms resolved following treatment with Doxycycline.

This case also reiterates the importance of repeating history taking, if the current differential diagnoses do not fit the clinical picture, and in this case lead clinicians to focus on the history of tick exposure and the timeframe of symptoms in relation to this.

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