

AN UNUSUAL PRESENTATION OF LISTERIOSIS: ANEMIA AND CUTANEOUS MANIFESTATIONS

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Abstract. *Listeria monocytogenes* is an intracellular pathogen causing food-borne disease. It usually affects the young as well as immunocompromised individuals and is associated with high mortality rates. Cutaneous manifestations have rarely been described. We describe an interesting case of a traveller from the tropics presenting with cutaneous listeriosis and anemia.

Keywords: *Listeria monocytogenes*, travel, cutaneous manifestations, anemia

INTRODUCTION

Listeria monocytogenes is an intracellular pathogen causing food borne disease. *Listeria* usually affects those with lower immunity (eg, infants, elderly, immunocompromised patients) and may result in mortality rates as high as 20% (Guevara *et al*, 2009). The majority of cases present with blood or central nervous system involvement, with few documented cases of cutaneous presentations (Siegman-Igra *et al*, 2002). We describe a case of a traveller from the tropics presenting with cutaneous listeriosis and anemia.

CASE REPORT

A 36 year old traveller from Peru, who was attending a conference in tropical Singapore, presented at our institution with fever. He first presented at a hospital in Peru with fever which started 1 day before his flight to Singapore. He

sought medical attention and was given symptomatic treatment. However, his fever persisted and he reattended at the emergency department in Singapore on arrival. His fever was accompanied by myalgia and arthralgia that started in his right thigh and later spread to the rest of his body. There was also presence of papular, erythematous, non-puritic lesions over the right shin and foot (not noticed by patient). The rest of the physical examination was unremarkable. Further history revealed the patient had been to the Amazon rainforest the week before he came to Singapore and had spent 3 days there, eating with the locals (fruit juice, fish and small bush animal meat). Significant past medical history included surgical removal of malignant melanoma on the right eyebrow one year ago. No chemotherapy was required and his disease had been in remission on presentation.

Other causes of the ongoing infection was tested: dengue, chikungunya, leptospirosis, rickettsiae, *Orientia tsutsugamushi*, chagas, yellow virus, Japanese encephalitis virus), which were all negative. The patient was treated empirically with intravenous rocephin and oral doxycy-

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Table 1
Laboratory values during admission.

Laboratory values	On admission	During admission	On discharge
Procalcitonin ($\mu\text{g/l}$)	5.6	10.1	<10.1
C – Reactive protein (mg/l)	348	>380	203
Hemoglobin (g/dl)	16.4	10.7	9.8
White blood cell count ($\times 10^9 /\text{l}$)	7.49	20.44	5.97
Platelets ($\times 10^9/\text{l}$)	135	695	548
Bilirubin (U/l)	40	37	23
ALP (U/l)	100	81	238
ALT (U/l)	59	49	40
AST (U/l)	69	108	57

ALP, alkaline phosphatase; ALT, alkaline aminotransferase; AST, aspartate aminotranferase.

cline. Shortly after, notice was received from the hospital he attended in Peru that there was growth of *Listeria monocytogenes* in blood cultures. This was sensitive to ampicillin, he was then treated with intravenous ampicillin.

During the course of admission, the patient developed anemia, for which he was clinically asymptomatic. The laboratory values during admission were presented in Table 1. After completing 2 weeks of IV ampicillin, the patient was discharged well with resolution of the systemic and cutaneous symptoms. As such, no skin biopsy was performed. His hemoglobin levels were also stable on discharge.

DISCUSSION

The case highlights a number of interesting and important points: 1) in this global age of connectivity, travel history and knowledge of the prevalent infectious diseases in the patient's native country is paramount; 2) *Listeria monocytogenes* may uncommonly present with cutaneous eruptions and anemia.

With the increased connectivity and enhanced transportation globally, the

spread of diseases has changed remarkably, increasing the risks of worldwide outbreaks of disease (Guevara *et al*, 2009). This was particularly demonstrated in the recent global H1N1 pandemic. Likewise for the clinician on the ground, a basic knowledge of prevalent infections in a traveller's native country will affect clinical decisions and treatment. In this case, the patient presented with a rare disease not commonly seen in a city-state like Singapore but communication with his doctors in Peru helped clinch the diagnosis, allowing prompt institution of treatment.

Listeria monocytogenes is commonly spread via the oral route and is known to invade the bloodstream when it crosses the mucosal barrier of the intestines. It is usually more common in Asians, immunosuppressed individuals, patients with hemochromatosis as well as those who have had prior cancer treatment. Interestingly, it is also more commonly seen in male patients more than 40 years old (Cain and McCann, 1986).

A search into the literature showed that most cases of cutaneous listeriosis is more traditionally described in patients who are frequently in close contact with



Fig 1—Erythematous papules of cutaneous listeriosis on dorsum of right foot.

animals *eg*, veterinarians and farmers (Lauchlin and Low, 1994; Siegman-Igra *et al*, 2002). However, the instances and ability to recognize cutaneous listeriosis remains a challenge to most clinicians.

Cutaneous listeriosis presents as small red tender papular or pustular lesions on the arms or hands (Lauchlin and Low, 1994). In these documented cases of cutaneous listeria, the patients had been directly involved in infected animals and developed malaise, headache, mild fever and these tender papules on the skin (Lauchlin and Low, 1994). It was noted in the paper that in most of these patients with cutaneous listeriosis, they responded very well to antibiotics treatment (Lauchlin and Low, 1994). In this patient, there was low suspicion of listeria as he had denied contact with infected animals and also did not have a wide spread rash unlike most documented cases.

During the course of the hospital stay, the patient developed anemia, which could have been a result of the *Listeria monocytogenes* infection. Anemia as a complication of *Listeria monocytogenes* has only been reported once in the literature,

and in that particular instance was attributed to hemolytic anemia (Chadwick and Graham, 1978). *Listeria monocytogenes* has been shown to produce soluble hemolysin, which causes hemolysis of red blood cells. This aids in the release of iron from erythrocytes, making it available for the bacteria to thrive (Sword, 1966). To date, there have been no *in vivo* studies of effects of purified hemolysin on hemoglobin levels (Sword, 1966). Unfortunately, in this case, a full anemia workup and hemolytic screen was not performed. However, the raised bilirubin, which normalized as his cutaneous and systemic manifestations resolved, suggests hemolysis as a possible etiology.

An interesting point to highlight in this case is the importance of occupational exposure. In this patient his job brought him into close contact with the forest and the local culture. As a result of his occupation, he shared an exotic meal with the villagers prior to falling ill, and this could have been the source of the infection. A recent publication by Centers for Disease Control and Prevention (CDC) in the USA illustrated that 83% of *Listeria* outbreaks was attributed to food vehicles, one of which were raw foods (CDC, 2013). Hence, in determining the source of an infection, especially in an outbreak, it is important that a thorough history considering occupational hazards should be considered as well.

Although listeriosis is a relatively rare disease usually food-borne, it is important to recognize the possible fatal complications *eg*, meningitis, sepsis and death. Hence, it is important to be more vigilant and consider the diagnosis in patients who present with contact with animals or recent ingestion of poorly stored or prepared foods. This is especially so in high risk patients: Asian, previous che-

motherapy, numerous blood transfusions, asthmatics, hemochromatosis and in this patient's case, previous non-hematological malignancy and the occupational exposure involved. There is also potential in further investigation into anemia in patients with listeria, as this could be a sequelae in these patients and patients could get unnecessary investigations or treatments if treated as a separate entity.

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