

# Listeriosis in Pregnant Women in Morocco: A Case Report

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**Abstract:** Listeriosis is a rare infectious disease. Pregnant women with listeriosis represent 1/3 of all listeriosis cases. Listeriosis is a foodborne disease. Sporadic as well as epidemic cases of listeriosis are usually related to contaminated processed food, especially meat dishes served in fast-food restaurants and dairy products. Pregnant women are at an increased risk for listeriosis infection. Unfortunately the symptoms are not specific and the diagnosis presents a considerable challenge. Although the literature offers some case reports on a complicated course of listeriosis during pregnancy the infection usually runs a mild course in pregnant women. Regardless, fetal or neonatal infection is related to very high risk of lethal complications in the newborn, among others: sepsis, meningitis or pneumonia. The authors report a case of a 26-year-old primigravida woman with listeriosis. Throughout this case they describe the course of the infection, diagnostic process and treatment of this disease.

**Keywords:** Listeria Monocytogenes, Pregnancy, Infection, Morbidity, Mortality

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## 1. Introduction

Listeriosis is a rare disease that causes mild maternal illness, but can be devastating to the fetus. Listeria's rare microbiologic features make it a difficult infection to diagnose and treat: it is an intracellular organism that hides within host cells. Because of the potentially severe consequences, it is important that obstetricians are familiar with the diagnosis, treatment, and prevention of listerial infection.

## 2. Case History

A 26 year old woman, housewife, was admitted to our delivery room in the 39th week of her first pregnancy for general malaise, weakness and fever of up to 39°C that started two days earlier. Her past general and gynecologic history was unremarkable. On admission, her general physical examination revealed no findings and her vital signs were normal except for fever of 39°C. Obstetrical ultrasound showed a pregnancy in cephalic presentation, fetal biometry

were between 25th and 50th percentile; The estimation of fetal weight was 3100 g and the quantity of amniotic fluid was normal. Non-stress test showed tachycardia with normal variability and no decelerations. Laboratory examination revealed a white blood cell of 16,500 cells/ml, hemoglobin 11,6 g/dl, C- reactive protein 10,5 mg/l and normal urinalysis. Blood type was ARh+. Blood culture was performed. Intravenous antibiotic treatment with ampicillin and gentamicin was begun and labor was induced with vaginal prostaglandin. Eight hours later she gave birth to a healthy male baby weighing 3,390g and with an Apgar score of 9/10. The baby underwent a full sepsis work-up that was normal, and he did well on follow-up. The patient was discharged after completing a week of IV antibiotics. Blood culture revealed Listeria monocytogenes. In addition, the pathologic examination revealed a third-trimester placenta with multiple intervillous and intravillous micro-abscess compatible with Listeria infection. Once we found out what the diagnosis was, we asked the patient about what she was consuming in terms of food. She responded by saying that she used to eat a lot of tuna during her pregnancy.

### 3. Discussion

*Listeria monocytogenes* is a common organism in nature and can be easily isolated from soil, dust, water, processed foods, raw meat, and the feces of animals and humans [1]. It is an aerobic, motile rod that grows well on most routine culture media [2]. *Listeria* is a unique pathogen because it has an intracellular life cycle. Once contaminated food has been ingested, *Listeria* can be phagocytosed by gastrointestinal cells and can enter the host without disrupting the integrity of the gastrointestinal tract [1]. Once the organism has reached the host cytoplasm, it rapidly divides and pushes up against the cell membrane; it can then be ingested by adjacent cells. Through this series of steps, *Listeria* can multiply and spread without being exposed to antibodies, neutrophils, or antibiotics in the extracellular fluid [2]. This explains why maternal listerial illness can be mild or even asymptomatic. Cell-mediated immunity is the host's defense against *Listeria*, and any condition that reduces cell-mediated immunity, such as pregnancy, can predispose to listerial infection [1]. *Listeria*'s intracellular transmission pattern likely explains its ability to cross the placental barrier. *Listeria* can also cross the blood-brain barrier, leading to meningitis or encephalitis [3]. Diagnosis of listeria requires culture of the organism from a sterile site. The identification usually takes 36 hours. Seven species of *Listeria* have been identified, but *Listeria monocytogenes* is the principal pathogen in humans and animals. There are several serotypes, including 1/2a, 1/2b and 4b, that are responsible for more than 90% of human infections. The bacteria grow well on most routine media when isolated from sterile sites. However, the organism may be difficult to isolate from mixed cultures such as vagina or rectum, or food products that may contain other bacteria. Therefore, selective media are recommended in these cases. Cold storage of the culture at 4°C will enhance the yield of the culture, since *Listeria* grows better at a low temperature, while the growth of competing bacteria will be inhibited. However, growth at a low temperature is slow, and it may take several weeks to identify the organism. Gram-stained preparations can be of help in the earlier stages. Interpretation can be difficult due to the bacterium's resemblance to other organisms. Selective immunohistochemical and serologic tests are used to definitively identify the pathogen [4]. Placental examination may reveal micro- and macro-abscesses and acute villitis, which strongly supports the diagnosis, although *Campylobacter* and streptococcal infections may occasionally exhibit similar histologic findings. The treatment of choice for listeriosis is penicillin and ampicillin either alone or with gentamycin. Since *Listeria* is an intracellular organism, the response to treatment may be slow due to relatively poor cell penetration. Consequently, ampicillin treatment should be continued for at least 2 weeks. Erythromycin can be used in patients allergic to penicillin. Trimethoprim-sulfamethoxazole is probably more effective due to its bactericidal activity and higher intracellular concentration, but it is relatively contraindicated during early and late stages of pregnancy [5,6]. Treating maternal listeriosis usually

results in successful in utero treatment of the fetus [5,7]. The efficacy of prophylactic antibiotic therapy for high risk patients has not been evaluated. Prevention and control are difficult, due to the fact that *Listeria* organisms are ubiquitous and most infections are sporadic. The most effective strategy is to avoid the source of infection, namely, contaminated food. Thus, pregnant women and other high risk groups should refrain from consuming raw or partially cooked food of animal origin, soft unpasteurized cheeses and raw vegetables. Interestingly, three recent reports have demonstrated that food borne listeriosis can cause serious and even fatal febrile illness with gastroenteritis in immunocompetent healthy persons [8,9,10]. In France, in an outbreak of listeriosis caused by pork tongue in gelatin, 26 cases reported since December 1999 resulted in 7 deaths [7]. In the USA, hot-dogs were identified as the vehicle transmitting *Listeria*, resulting in 50 cases and 6 adult deaths reported in early 1999 [9]. In Italy, contaminated corn and tuna salad caused an outbreak of febrile gastroenteritis among 1,566 mostly healthy young people [10].

### 4. Conclusion

Listeriosis is a rare disease that causes mild maternal illness, but can be devastating to the fetus. *Listeria*'s rare microbiologic features make it a difficult infection to diagnose and treat: it is an intracellular organism that hides within host cells. Once listeriosis is diagnosed, high-dose penicillin or ampicillin is the treatment of choice. In any case of a pregnant woman presenting with signs of bacterial infection and preterm labor, or at term with infection of unknown source, *Listeria* infection should be suspected. Following delivery, the placenta should be carefully examined histologically. Ongoing education about the transmission of *Listeria*, as well as governmental surveillance programs, will likely continue to reduce the incidence of listeriosis in pregnancy.

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