Case report

A CASE OF LISTERIA MONOCYTOGENES MENINGITIS IN AN ELDERLY FEMALE COMPLICATED BY INTRACEREBRAL HEMORRHAGE AND HYDROCEPHALUS

ABSTRACT:

Listeria monocytogenes is an important foodborne bacterial pathogen in immunosuppressed patients, pregnant women, and individuals at the extremes of age, including neonates and older adults. Invasion of the central nervous system (CNS) and bacteremia are the principal clinical manifestations of infection in these hosts. In contrast, normal hosts who ingest high numbers of Listeria may develop self-limited febrile gastroenteritis.

Hydrocephalus and intracranial hemorrhage (ICH) are very rare and severe complications of L. monocytogenes infection. ICH associated with L. monocytogenes has been reported even less frequently.

L. monocytogenes was cited as the fifth most common cause of meningitis after H. influenzae, S. pneumoniae, N. meningitidis, and group B streptococcus; however, L. monocytogenes meningitis had the highest associated mortality rate (22%). The mortality rate is low (0-13%) for adults with listerial meningitis who do not have serious underlying disease or are not receiving immunosuppressive treatment

Keywords: Listeria meningitis, intracerebral hemorrhage, hydrocephalus, gram positive rods, elderly patients.

INTRODUCTION:

Listeria monocytogenes is a gram-positive facultative intracellular bacillus. It is an important cause of foodborne illness, and in most cases, the illness manifests as acute, self-limited, febrile gastroenteritis in healthy individuals. However, it can also present as systemic (invasive) listeriosis in immunosuppressed patients, with more severe symptoms and high hospitalization and case fatality [1]. At least 7 outbreaks of foodborne gastroenteritis for which *L. monocytogenes* was the most likely etiology have been described. The symptoms most frequently reported are fever (in 60%–100% of patients), diarrhea (in 33%–88%), arthromyalgia (in 20%–100%), and headache (in 15%–88%). In most outbreaks, >70% of patients had at least 1 gastrointestinal symptom (e.g., diarrhea, vomiting, nausea, and/or abdominal pain) [2]

In this paper, we present a case of L. monocytogenes bacteremia in a 74-year-old female, complicated by intracranial hemorrhage. He presented at first with nonspecific symptoms of fever and vomiting for 10 days and ASOC for 2 days and on later admission presented with sudden deterioration of consciousness which prompted further investigations that revealed the presence of ICH.

CASE PRESENTATION:

A 74 years old female was admitted to the hospital with 10 days history of intermittent fever upto 101F, vomiting and loose stools and altered sensorium for 2 days and also gave history of 1 episode of generalized tonic clonic fit during this period. Her past medical history included type 2 diabetes mellitus, essential hypertension and right breast cancer with bony mets. Before admission in our facility patient remained admitted in another hospital for 1 week where lumber puncture was performed that was in favor of bacterial meningitis.

On physical examination her glass gow coma scale (GCS) was 8/15, doll's eye movements were present, pupils were reactive to light bilaterally, nuchal rigidity present and positive brudzinski sign. She was maintaining oxygen saturation at room air.

Comment [SV1]: Glasgow Coma Scale NOT glass gow coma

The blood laboratory findings showed raised white blood cells (WBCs) and erythrocyte sedimentation rate (ESR), while red blood cells, hemoglobin, urea, creatinine, liver function test, coagulation profile, C reactive protein (CRP), urine complete examination and serum electrolytes were normal. The lumber puncture on admission revealed turbid cerebrospinal fluid (CSF), with 867cells/microliter leukocytes (98% polymorphs and 2% lymphocytes), 800mg/dl proteins , sugar 76mg/dl, CSF gram stain showed gram positive rods and was negative for fungi and acid fast bacilli. On 3rd day urine culture and sensitivity showed candida spp. CSF culture showed no growth and on 8th day blood culture was positive for listeria monocytogens that was senstitive to ampicillin. Listeria meningitis was working diagnosis. So ampicillin 2 gram 4 hourly was started for total of 21 days. Patient then discharged home after 5 days of initiating ampicillin. CT Brain was unremarkable. Patient kept in follow up every week after that.

Comment [SV2]:

Almost after 3 weeks , patient again presented with sudden deterioration of consciousness. Her GCS was 9/15, pupils were reacting to light, maintaining oxygen saturation at 2 liters. Other examination was unremarkable. All baseline laboratory investigations complete blood count, urea, creatinine, CRP and serum electrolytes were within normal limits. Blood culture showed no growth. In imaging, CT scan of brain was done that showed intracerebral hemorrhage as in figure 1. On 3rd day of repeat CT brain, there was right parietal lobe intracerebral bleed with interventricular ipsilateral extension as shown in figure 2. So, extraventricular drain was placed and burr hole craniotomy done by neurosurgeon. Patient was put on ventilator after the procedure. Her conscious level did not improve and kept on deteriorating. And patient died on day 20th of admission.

Figure 1 : **Intracerebral hemorrhage shown in CT scan of brain**

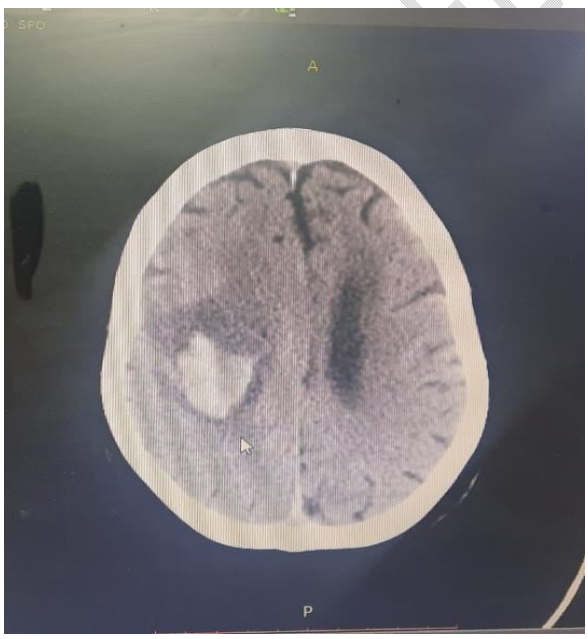

Figure 2: **Right parietal lobe intracerebral bleed with interventricular ipsilateral extension in CT scan of brain**

DISCUSSION:

L. monocytogenes is transmitted to the consumer mainly via contaminated ready-to-eat foods .The presence and potential persistence of *Listeria* spp. in food processing facilities are often caused by environmental recontamination at the farm or plant level. [3]

Several authors have concluded that it is virtually impossible to permanently eradicate *L. monocytogenes* from food environments because of its ubiquitous presence in the environment and many potential avenues for entry into the facility. Therefore, elimination and exclusion of the organism must be actively managed, for example by adequate hygienic design of a food premise and equipment, effective cleaning and sanitation, personnel practices and movement of people and materials into areas where food products are exposed. [4]

A rare complication of Listeria meningitis is intracranial hemorrhage, which is also one of the determinants of unfavorable outcomes. The underlying pathophysiology of intraventricular hemorrhage in L. monocytogenes infection is still unknown and may be related to dysregulation of both the coagulation and fibrinolytic pathways and to vascular endothelial cell swelling and activation[5] Intracranial hemorrhages are a severe complication of bacterial meningitis, occurring in about 3% of adults.[6]Blood cultures are reported positive for L.monocytogenes in 73% of patients in literature. [7]

Our patient was on immunosuppressive drugs, which are linked to developing Listeria infections in multiple case reports. She is also older than 65 years and has type II diabetes mellitus, both of which place her at risk for developing listeriosis.

CONCLUSION:

Listeria monocytogenes is an important cause of systemic infection in immunosuppressed patients, and it can present with nonspecific symptoms in these hosts, such as fever, malaise, and mental status changes. Diagnosis is usually challenging, as it is often not possible to clinically distinguish L. monocytogenes infection from infections with other entities that manifest with fever and constitutional symptoms. Intracranial hemorrhage is one of the most severe and very rare complications of L. monocytogenes infection, and it is associated with a high mortality rate. Timely diagnosis and proper antibiotics administration are essential for a favorable outcome.

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