

Bacterial Meningitis after Spinal Anesthesia for Caesarean Section: A Case Report

Afshan Ambreen^{1*}, Sumreen Anjum¹, Hafiz Habib Ur Rehman Khalil²

¹Department of Gynaecology and Obstetrics, Fatima Memorial Hospital, Lahore, Pakistan

²PGR, Lahore General Hospital, Lahore, Pakistan

ABSTRACT

Bacterial meningitis after spinal anesthesia is considered rare but is a very fatal complication. The incidence of this complication after central neuro-axial blockade varies from 0% to 0.04%. There are multiple routes at which bacteria can enter into the subarachnoid space. Lumbar puncture bypasses the natural defense barrier of central nervous system and therefore carries a risk of transmitting infection to the meninges.

We report a case of meningitis in a lady who underwent spinal anesthesia for elective lower segment caesarean section. She developed signs and symptoms of meningitis seven hours after the procedure. Her cerebrospinal fluid (CSF) analysis was suggestive of bacterial meningitis and she didn't recover & expired due to complication of meningitis.

Key words: Bacterial meningitis, Spinal anesthesia, Post meningitis complications, Caesarean section

HOW TO CITE THIS ARTICLE: Afshan Ambreen, Sumreen Anjum, Hafiz Habib Ur Rehman Khalil, Bacterial Meningitis after Spinal Anesthesia for Caesarean Section: A Case Report, J Res Med Dent Sci, 2021, 9 (3):118-120.

Corresponding author: Afshan Ambreen

e-mail ✉: tamimrai18@gmail.com

Received: 01/03/2021

Accepted: 16/03/2021

INTRODUCTION

Bacterial meningitis after spinal anesthesia is a rare but serious complication. It is a medical emergency because mortality is high & those who recover may suffer from permanent neurological damage. It can occur in various procedures including spinal anesthesia, diagnostic lumbar puncture, combined epidural spinal analgesia and anesthesia and other neurological procedures involving spinal canal [1]. According to several retrospective studies, the incidence of infectious complications after epidural and spinal anesthesia varies from 0% to 0.04% [2].

There are multiple causes of post-spinal Anesthesia meningitis like breach in aseptic precautions, migration of bacteria from blood into subarachnoid space because of microscopic bleeding by the needle and lumbar puncture and primary contamination of the drug as well as the equipments [3].

There is another type of meningitis called aseptic meningitis at which the meningitis is caused by hypersensitivity reaction or direct irritation of the spinal meninges by medication administered into the subarachnoid space [4]. We report a case of bacterial meningitis after spinal anesthesia as it's a fatal complication so early diagnosis and treatment is the mainstay of management.

CASE REPORT

A 26 years old lady, sixth gravida with previous lower segment caesarean section was admitted at 38th week of gestation for elective lower segment caesarean section. She was vitally stable and was afebrile. Her antenatal and past medical history was unremarkable. Her complete blood count and urine analysis were normal.

She was given intravenous ceftriaxone 1g before her caesarean section. Skin disinfection was done using povidone iodine 10% w/v solutions. Subarachnoid blockade was done using bupivacaine SP1 5mg spinal anesthesia was given by the 2nd year resident in 2nd attempt & at that time CSF was clear.

Table 1: Results of CSF examination.

Parameters	Case (%)	Bacterial meningitis	Normal (%)
Transparency	Turbid	Turbid	Clear
WBCs (/mm ³)	2000(95% neutrophils 5% lymphocytes)	10-10000, neutrophil predominant	0-5 (L-60-70, M-30-50)
RBCs (/mm ³)	10	absent	0
Glucose (mg/dl)	67	<40	40-70
Proteins (mg/dl)	414	>45	15-50
Gram-stain %	Negative	Positive >60	Negative
Culture %	Negative	Positive >80	Negative

The LSCS was uneventful. Seven hours after the procedure patient became irritable & disoriented. To control her irritability 2mg of midazolam & 4mg of nelbuphine was given. Within 2 hours, Patient's irritability settled but patient suddenly collapsed, became pulseless with no blood pressure readings. She revived after 10 minutes of CPR & was put on ventilator.

Later on, she developed high grade fever along with signs of meningeal irritation and kerning's sign was positive. Fundoscopy followed by urgent cerebrospinal fluid (CSF) examination and CT scan was done. The findings were suggestive of cerebral edema. Fundoscopy did not show any evidence of papilledema. CSF picture was suggestive of bacterial meningitis though Gram-staining and culture were negative. Total white blood cell count was raised, but blood culture was negative. Lumbar puncture showed turbid CSF. Results of investigations are shown in Table 1.

Patient developed meningococcal rash sixty hours after the onset of meningitis which was confirmed by diascopy test. Intravenous dexamethasone and mannitol were given to reduce cerebral edema. She was treated for two weeks with intravenous antibiotics i.e. ceftriaxone, vancomycin, meropenem and ampicillin. Her rash disappeared on 5th post-op day. Her tracheostomy was done. She remained on ventilator for 22 days without ionotropic support on NG supplementation. Later on she improved but still she was in coma for next 2 months. Her GCS was 7/15. Later on, she is developed complications of meningitis which were evident by MRI which showed right temporal ischemic insult with hydrocephalus & white matter changes. The patient expired after 2 months due to multiple complications associated with bacterial meningitis after spinal anesthesia.

DISCUSSION

Meningitis following lumbar puncture, spinal or extradural anesthesia is extremely rare.

The etiology has been reviewed recently [5]. The possible causes are breach in sterility and aseptic techniques while spinal anesthesia is being administered, hematogenous spread in septicemic patients or in patients with asymptomatic bacteremia due to microscopic bleeding while spinal anesthesia is administered or due to contaminant being present in the drug utilized or the equipment used [3,6]. Contamination may take place from scrubbing and cleansing solutions, surgical glove powder or from the spinal needle or from the drug which is injected intrathecally during the procedure of spinal anesthesia. Sometimes systemic administration of drugs like NSAIDs, H2 blockers, trimethoprim, and sulfadiazine may also lead to aseptic meningitis like symptoms [7-9].

Commensals of oral cavity and respiratory tract may be the causative organisms which are of low virulence but multiply rapidly in CSF leading to bacterial meningitis in seven to 24 hr. Droplet infection from the health workers, doctors or the patient may lead to contamination of the spinal needle on an incompletely sterilized patient's skin [10]. Frequently clustering of cases is seen by a single anesthesiologist. But in our hospital we only reported a single case. To localize the exact source of contamination, isolates from nasopharyngeal swabs of patients as well as health care workers need to be compared with patients CSF picture. Thus following personal protective measures like a tight fitting mask covering nose and mouth is essential while performing the spinal anesthesia. The scrubbing by the health care worker should be fastidious and preparation of patient's skin should be done under aseptic measures [11]. IBM is a rare but serious complication of neuraxial procedures. A recent history of such a procedure in an ill-appearing patient should alert the physician to consider IBM [6].

We suspected meningococcal meningitis in this case based on the clinical presentation and

positive cerebrospinal fluid cell count & presence of meningococcal rash on left arm which disappear on 5th post op day of section. The cerebrospinal fluid culture and gram stain were negative possibly due to a course of empirical antibiotics before her caesarean section. But despite of early diagnosis and treatment patient couldn't improve completely and became comatose and expired after 2 months due to complications of meningitis.

REFERENCES

1. Burke D, Wildsmith JA. Meningitis after spinal anaesthesia. *Br J Anaesthesia* 1997; 78:635-636.
2. Govardhane BT, Jambotkar TC, Magar JS, et al. Meningitis following spinal anaesthesia. *Med J Dr. DY Patil University* 2015; 8:513.
3. Bhatnagar V, Kulkarni SN, Chauhan A, Singh JK. Meningitis post-spinal anaesthesia: A report of two cases. *Anesthesiol Case Rep* 2018; 1:32-34.
4. Fijter SD, DiOrio M, Carmean J, et al. Bacterial meningitis after intrapartum spinal anaesthesia-New York and Ohio, 2008-2009. *Morbidity Mortality Weekly Report* 2010; 59:65-69.
5. Lee JJ, Parry H. Bacterial meningitis following spinal anaesthesia for caesarean section. *Br J Anaesthesia* 1991; 66:383-386.
6. Barnwell R, Ball V. Iatrogenic bacterial meningitis: an unmasked threat. *Canadian J Emergency Med* 2012; 14:263-266.
7. Horlocker TT, McGregor DG, Matsushige DK, et al. Neurologic complications of 603 consecutive continuous spinal anaesthetics using macrocatheter and microcatheter techniques. *Anesthesia Analgesia* 1997; 84:1063-1070.
8. Govardhane BT, Jambotkar TC, Magar JS, et al. Meningitis following spinal anaesthesia. *Med J Dr. DY Patil University* 2015; 8:513.
9. Ducornet A, Brousous F, Jacob C, et al. Meningitis after spinal anaesthesia: Think about bupivacaine!. *Ann Fr Anesth Reanim* 2014; 33:288-290.
10. Baer ET. Iatrogenic meningitis: The case for face masks. *Clin Infectious Diseases* 2000; 31:519-521.
11. Baer ET, Warltier DC. Post-dural puncture bacterial meningitis. *J Am Society Anesthesiol* 2006; 105:381-393.