

Case Report

Fetal Bradycardia Caused by Maternal Hypothermia: A Case Report

Muna Alqralleh¹, Rahma Al-Omari¹, Shrouq Aldahabi¹, Doha Abdelbage², Maher Al-Hajjaj^{3*} and Lujain Alababesh⁴

¹Department of Obstetrics & Gynecology, Jordanian Royal Medical Services, Amman, Jordan

²Pediatrics, Alhassahisa Hospital, University of Bahri, Khartoum, Sudan

³Department of Urology, Aleppo University Hospital, Aleppo, Syria

⁴M.D, Balqaa Applied University, Alsalt, Jordan

More Information

*Address for correspondence: Maher Al-Hajjaj, Department of Urology, Aleppo University Hospital, Aleppo, Syria, Email: alhajjaj963@gmail.com

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Abstract

A 27-year-old pregnant woman presented with acute pyelonephritis for the first time in her pregnancy. We admitted the patient for treatment. On the second day, her fetus had bradycardia as a result of maternal hypothermia. Infusion of warmed fluid and providing a warm blanket were the definite treatment in this case. However, the fetal heart rate gradually returned to normal after rewarming the patient. We discharged the patient in a good state after one week. No complications were noticed.

Introduction

Fetal bradycardia is defined as a baseline Fetal Heart Rate (FHR) of less than 110 beats per minute (bpm) that is present for 10 minutes or longer. An FHR might occasionally run between 100 and 110 bpm as a normal variation, most often seen in patients in labor [1]. However, it is unusual for a sustained FHR to be less than 100 bpm. Many causes were defined to start fetal bradycardia. Some of them are: Hypotension or underperfusion, maternal hypoxia, uterine rupture, placental abruption or infarct, fetal anemia or hemorrhage, fetal hypoxia, or fetal cardiac arrhythmia (heart block). These cases can lead to fetal bradycardia.

The importance of this case is to increase awareness of the possibility of fetal bradycardia in accidental hypothermia and demonstrate a positive outcome using a conservative approach.

Case presentation

A 27-year-old woman, first gravida, was admitted to the hospital at 27 1/7 weeks of gestation because she had acute pyelonephritis. On admission, she was well-oriented. Her vital signs were as follows: Bp: 110/65 mmHg, pulse: 113/min, respiratory rate 25/min, and her temperature was 38.6 °C.

Blood tests are shown in Table 1. Urinalysis showed 100-150 WBC with bacteria ++.

We started antibiotics intravenously with the third generation of cephalosporin (ceftriaxone) after we sent a sample of urine for culture.

On the second day of admission, the patient had a low temperature (33.8 °C) because of a bad air conditioner warming service. The maternal heart rate was between 102 and 107 bpm, her blood pressure was 113/74 mm Hg, and her oxygen saturation was 99%.

We noticed that the fetal heart rate dropped from a baseline of 131 bpm to the upper 82 to low 88 bpm.

The consensus decision was that the fetal bradycardia represented a normal response to maternal hypothermia.

We started the infusion of warm fluids intravenously. In addition, our patient was warmed with thermal blankets, and as the maternal temperature rose over the next 2 h the fetal heart rate slowly returned to normal.

The fetus demonstrated good interval growth and all Doppler studies were within normal limits.

Table 1: Laboratory reports of the patient.

WBC	Hgb	PLT	Cr	Urea	Glu	PH	Na	K
14 × 10 ⁹ /ml	11.2 gm/dl	350 × 10 ⁵ /mcl	1 mm/dl	44 mg/dl	97 mg/dl	7.37	140 mEq/L	5.5 mEq/L



After one week, we discharged our patient after she recovered.

Follow-up upon delivery was as usual.

Discussion

Fetal tachycardia in association with maternal hyperthermia occasionally occurs during pregnancy and usually in response to infective illness [2].

The occurrence of even mild degrees of fetal bradycardia, if prolonged, requires an assessment by the clinician.

Many causes of hypothermia exist, but they are often categorized into impaired thermoregulation or increased heat loss [3].

In reviewing the literature from the past articles published, we found many other reported cases of fetal bradycardia associated with maternal hypothermia. Of these, four were associated with urosepsis, two with fetoscopic surgery, one with hypoglycemia, one with drug or weather exposure, one reported with magnesium sulfate infusion, and three were undetermined.

Common causes seen with increased heat loss include trauma, major infections, shock, cardiopulmonary disease, drugs or toxins, and cold infusions [1].

When a body is exposed to cold external temperatures, the heart rate will often initially increase to produce a warming

response. However, cold intrinsic temperature changes (core body temperatures) will produce a decrease in membrane resting potentials, leading to depolarization [4].

Conclusion

Fetal bradycardia is associated with and can be caused by maternal hypothermia. The appearance of fetal heart rate tracing in the setting of maternal hypothermia is a stable baseline with moderate variability. Accelerations appropriate for gestational age might also be present.

Consent

Written informed consent was obtained from the patient for publication of this case report, in line with local ethical approval requirements. No other requirements were stipulated.

References

1. Spires BP, Towers CV. Fetal bradycardia in response to maternal hypothermia. *Obstet Gynecol.* 2020;135(6):1454-1456. Available from: <https://doi.org/10.1097/aog.0000000000003867>
2. Aboud E, Neales K. The effect of maternal hypothermia on the fetal heart rate. *Int J Gynaecol Obstet.* 1999;66(2):163-164. Available from: [https://doi.org/10.1016/s0020-7292\(99\)00058-2](https://doi.org/10.1016/s0020-7292(99)00058-2)
3. Brown DJA, Brugger H, Boyd J, Paal P. Accidental hypothermia. *N Engl J Med.* 2012;367:1930-1938. Available from: <https://doi.org/10.1056/nejmra1114208>
4. Buzatu S. The temperature-induced changes in membrane potential. *Riv Biol.* 2009;102(2):199-217. Available from: <https://pubmed.ncbi.nlm.nih.gov/20077389/>