Case 16 (Umbilical cord complications, excluding cord prolapse- 3)

Summary

Gestational weeks 35 weeks' gestation **Risk factors** None **Birth weight** 1900 g level

Delivery course The woman had abdominal distention. ▶ Although the feeling resolved, she visited the prenatal care facility to confirm the fetal condition. ▶ She was referred to a higher-level medical institution because of the abnormal FHR patterns. ▶ She was transported to a birthing facility because of the diagnosis of non-reassuring fetal status. ▶ Cesarean section was performed.

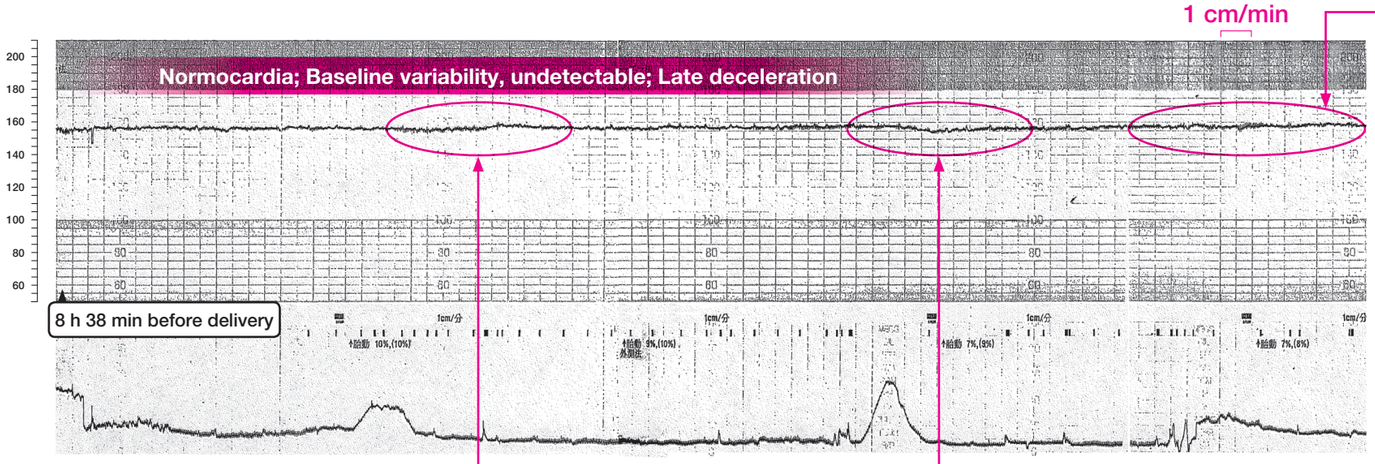
At the time of the visit to the prenatal care facility

Approximately 17 h before delivery

She had felt abdominal distention. The feeling soon resolved.

8 h 48 min before delivery

She visited the facility for confirmation of fetal condition.
Cervical dilatation one fingertip dilated
No vaginal bleeding; No feeling of abdominal distention
The estimated fetal body weight and placental localization were confirmed on ultrasonography.

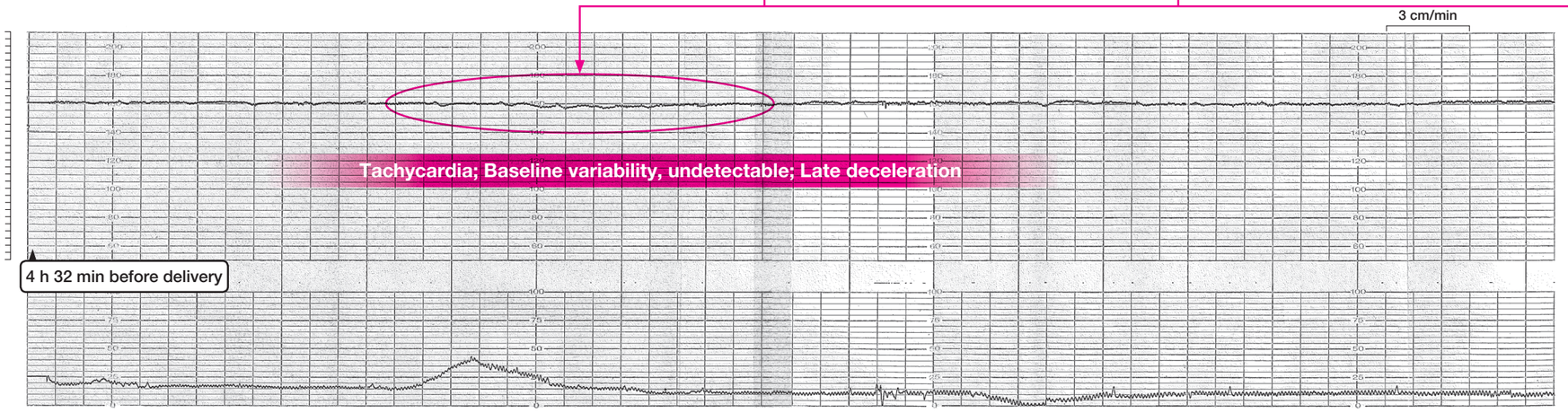


She was referred to a higher-level medical institution (transport source birthing facility) because of the absence of accelerations.

Cautions in interpretation

The baseline variability seemed to be visually detected due to the paper speed of 1 cm/min; actually, however, it was considered undetectable as in the second column.

At presentation to the transport source birthing facility



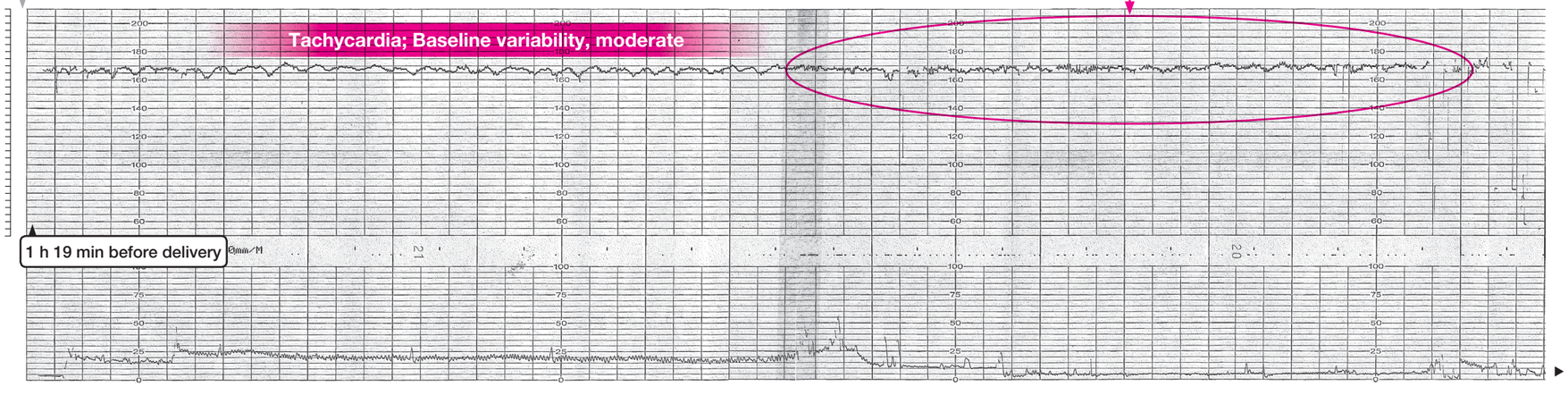
Mother was transported because of the diagnosis of non-reassuring fetal status.

Cautions in interpretation

Caution is needed to avoid missing the shallow late decelerations.

No retroplacental hematoma was found on ultrasonography. Cervix was closed.
No vaginal bleeding; Irregular uterine contractions; Securing vascular access.

On admission to the birthing facility, before delivery



Cautions in interpretation

The baseline variability finding was different from that in the segment prior to the circle.
Noise (jitter) occurred because of the shift of the Doppler probe. Caution is needed, because this may be mistaken as a baseline variability. The Doppler probe should be placed at the appropriate site.

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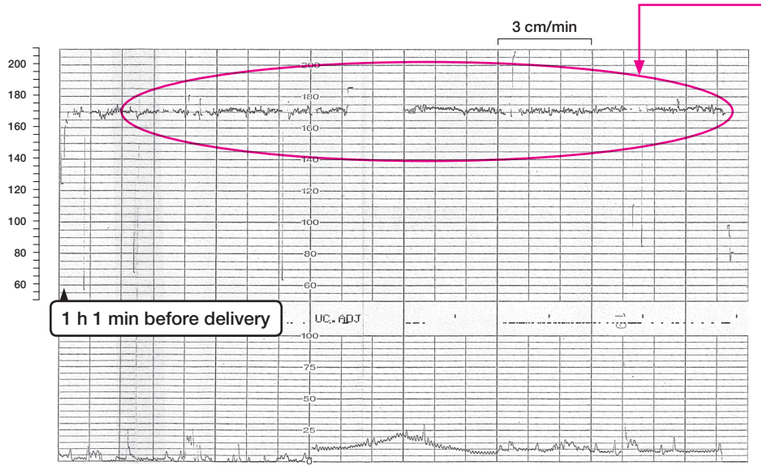


54 min later, baby was delivered by cesarean section.

Cautions in interpretation

Continuing from the former segment, noise (jitter) occurred because of shift of the Doppler probe. Caution is needed, because this could be mistaken for baseline variability. The Doppler probe should be placed at the appropriate site.

Findings associated with delivery

- Umbilical artery pH was 7.3 level.
- Newborn course:
  Apgar score; 3 at 1 min
  5 at 5 min
- Findings of the amniotic fluid, umbilical cord, and placenta:
  Meconium staining noted.
  Histopathological examination ▶ No information

- Causes of the development of cerebral palsy in the cause analysis report
  Umbilical cord complications, excluding cord prolapse

Case 17 (Umbilical cord complications, excluding cord prolapse- 4)

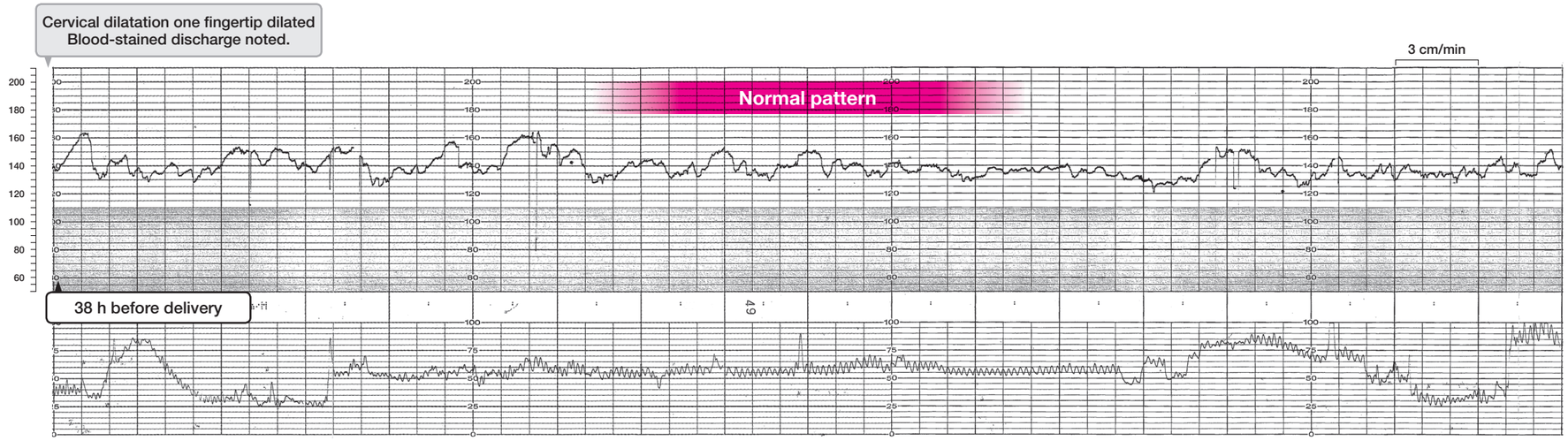
Summary

Gestational weeks 40 weeks' gestation **Risk factors** None **Birth weight** 3500 g level

Delivery course The woman was admitted to hospital because of labor pains. ▶ Cesarean section was performed based on the diagnosis of non-reassuring fetal status.

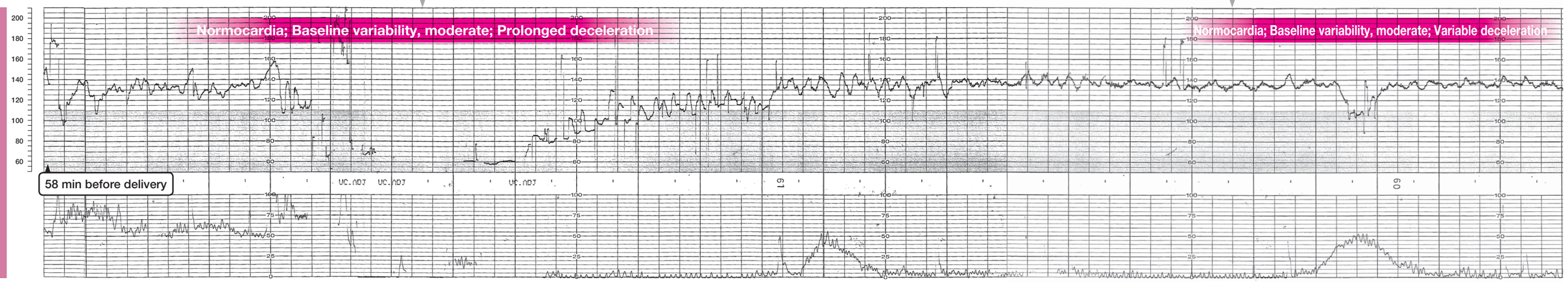
On admission

41 h 52 min before delivery
Interval of the uterine contractions 10 min



30 h 2 min before delivery
Rupture of membranes.

Before delivery



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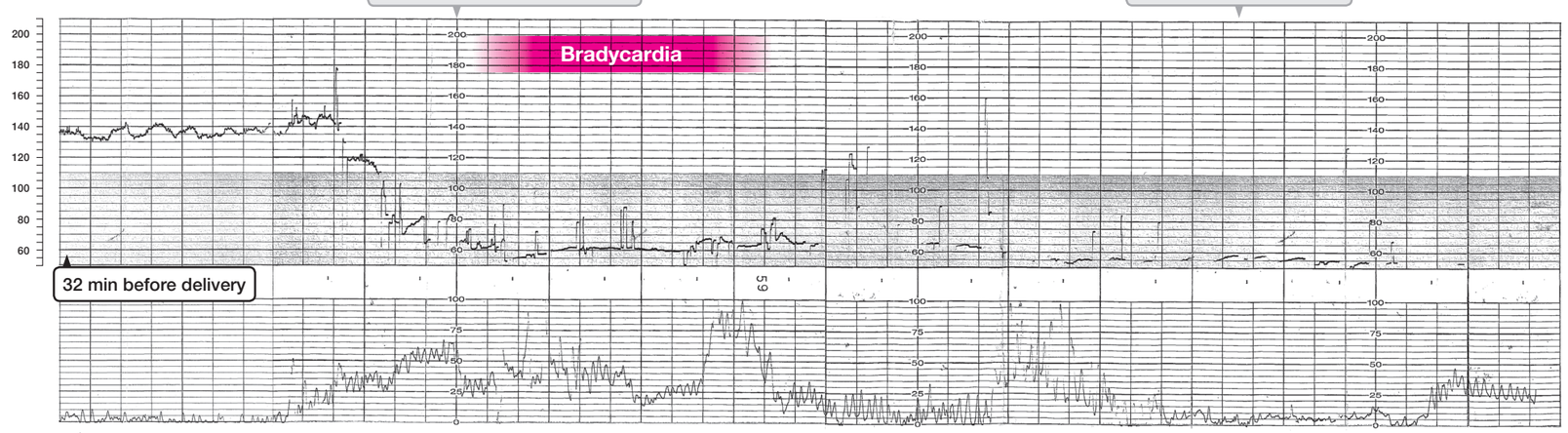


16 min later, baby was delivered by cesarean section.

Findings associated with delivery

- Umbilical cord blood gas analysis: No information
- Newborn course:
  Apgar score; 1 at 1 min
  1 at 5 min
- Findings of the amniotic fluid, umbilical cord, and placenta:
  Extremely scanty meconium staining
  Histopathological examination ▶ Thrombus in the umbilical vessels.
  Minimal chorioamnionitis; bleeding from the marginal part of the placenta and retroplacental hematoma, both mild to moderate

- Causes of the development of cerebral palsy in the cause analysis report
  Umbilical cord complications, excluding cord prolapse

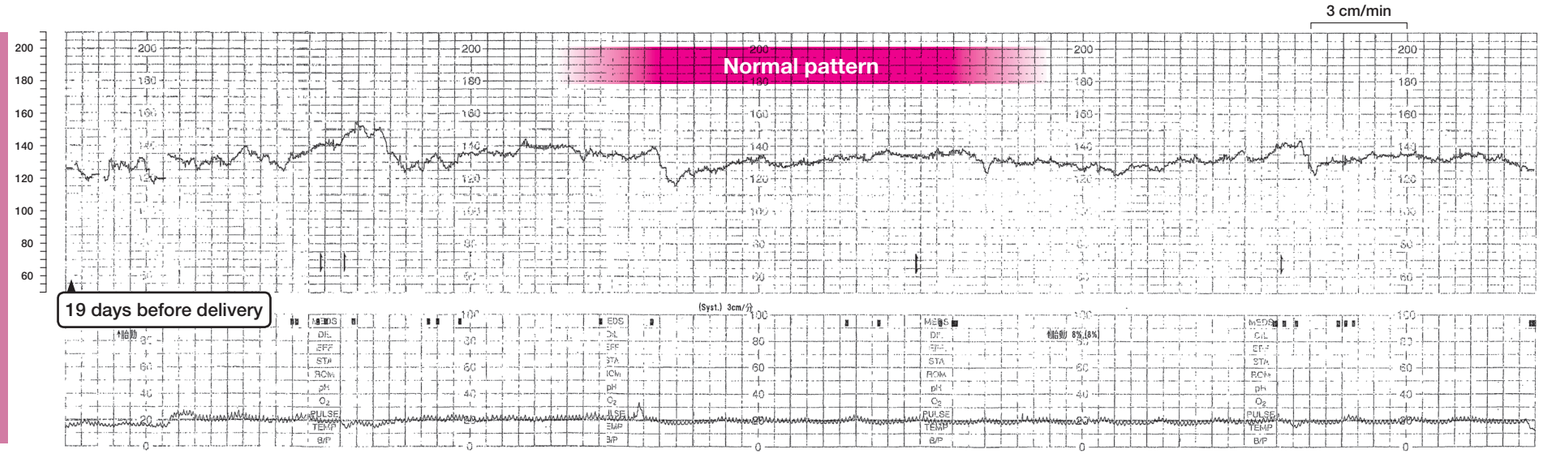
Case 18 (Chorioamnionitis)

Summary

Gestational weeks 39 weeks' gestation **Risk factors** Obesity **Birth weight** 3400 g level

Delivery course She was admitted to hospital because of rupture of membranes, pyrexia and onset of labor. ▶ Baby was delivered vaginally.

At the outpatient prenatal care



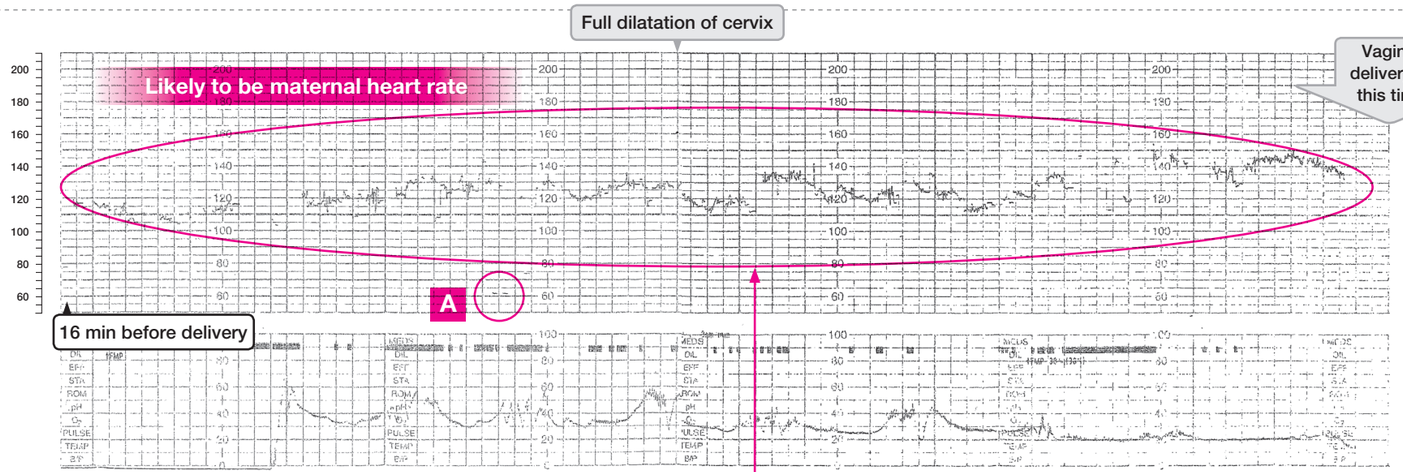
On admission, before delivery

11 h 9 min before delivery
Watery vaginal discharge

59 min before delivery
Onset of labor. Her body temperature was 38.7 ºC.

24 min before delivery
She visited the facility; interval of the uterine contractions 1-2 min

17 min before delivery
Cervical dilatation 6 cm
Blood tests
(WBC 8700/μL, CRP 0.17 mg/dL)
Culture of the vaginal discharge
(MRSA 3+)



Findings associated with delivery

- Umbilical artery pH was 6.8 level
- Newborn course:
  Apgar score; 1 at 1 min
  2 at 5 min
- Findings of the amniotic fluid, umbilical cord, and placenta:
  Meconium staining noted.
  Histopathological examination ▶ Chorioamnionitis; Funisitis

- Causes of the development of cerebral palsy in the cause analysis report
  Chorioamnionitis

Cautions in interpretation

Retrospectively, Segment A was considered to be persistent bradycardia and the record on admission was likely to be the maternal heart rate, based on the following points.

(1) The patterns of the baseline variability and accelerations are different between the record at the outpatient prenatal care (first column) and that at admission (second column).
(2) Maternal heart rates are reported to be similar to the acceleration patterns associated with uterine contractions.
(3) In Segment A, 60 bpm, which was suspected as the FHR, was recorded.
(4) The value of 120 bpm may be considered to be the maternal heart rate under the situation at the time right before delivery of the baby and maternal pyrexia.
(5) Umbilical arterial gas analysis showed a pH 6.8 level.

Case 19 (Uterine rupture)

Summary

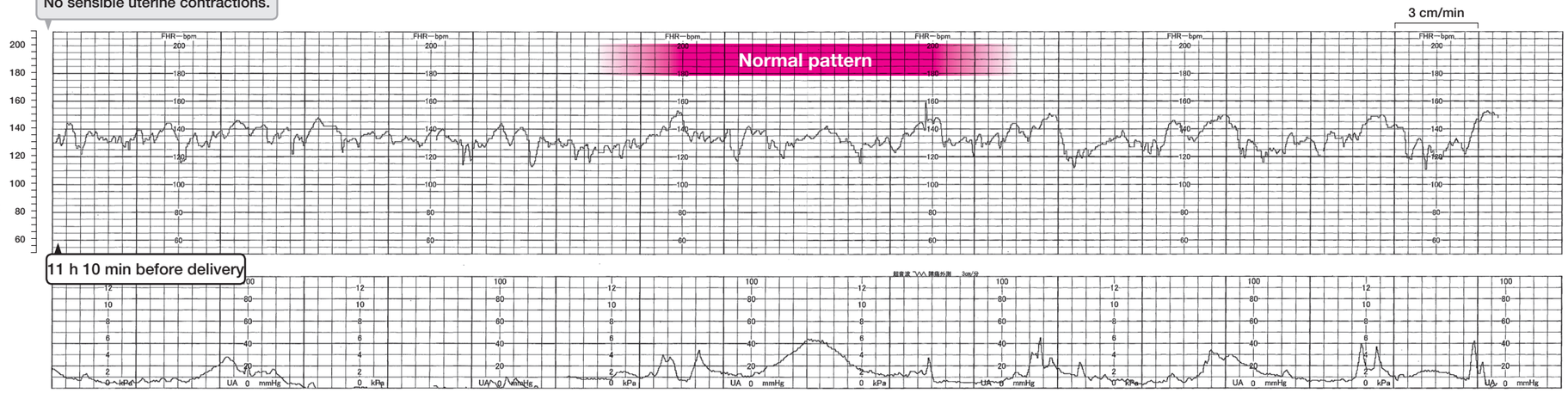
Gestational weeks 39 weeks' gestation **Risk factors** Prior cesarean birth; GBS colonization **Birth weight** 3000 g level

Delivery course The woman was admitted to hospital because of rupture of membranes. ▶ TOLAC* ▶ Cesarean section was performed based on the diagnosis of non-reassuring fetal status.

* TOLAC = trial of labor after cesarean delivery (when vaginal delivery is attempted for a woman with a previous history of cesarean section).

On admission

Cervix was closed.
No sensible uterine contractions.

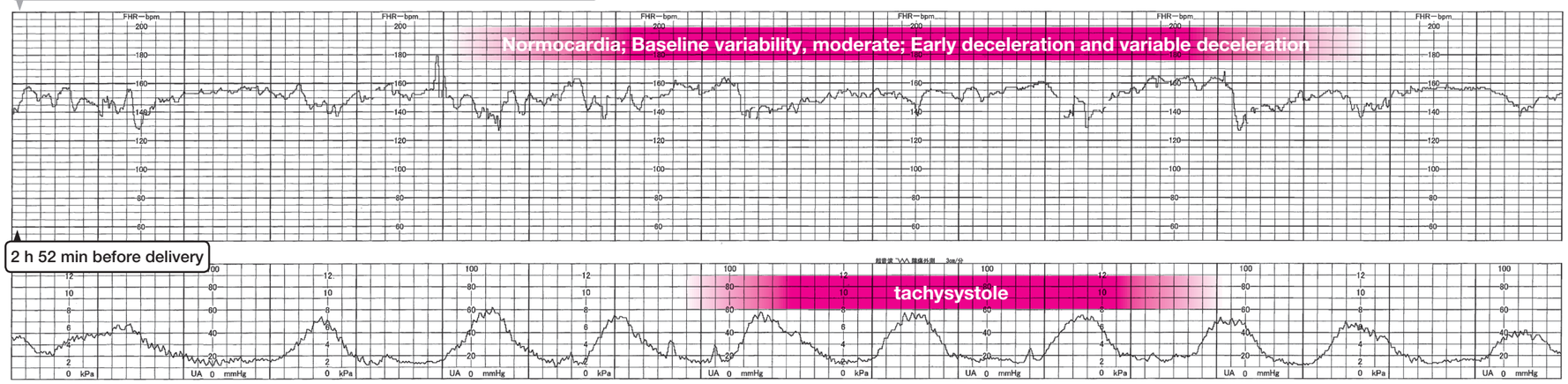


16 h 28 min before delivery
Rupture of membranes.

7 h 43 min before delivery
Onset of labor

During hospitalization

Cervical dilatation 2 cm
Small amount of blood-stained discharge; uterine contractions at 2-min intervals.



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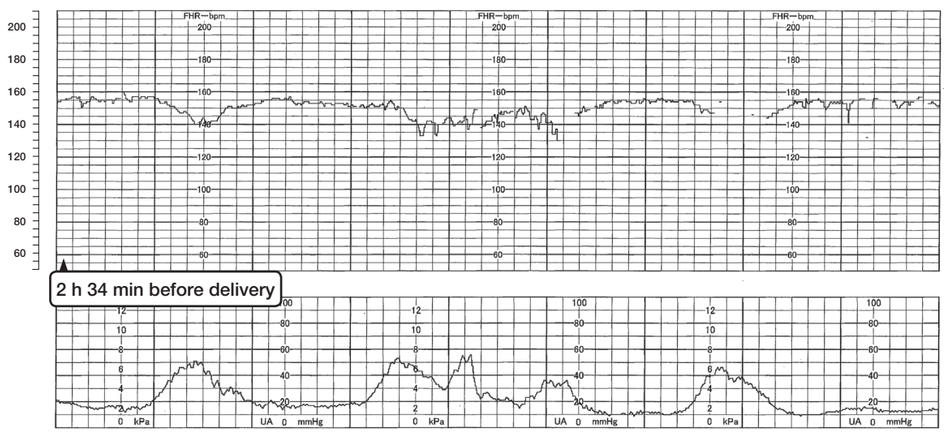
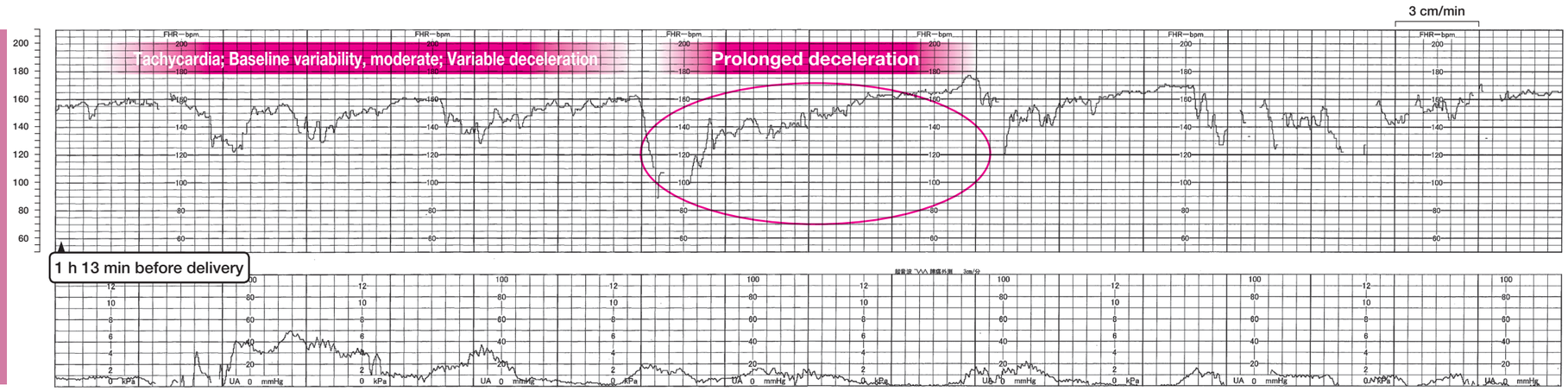
* tachysystole (see page 14)



2 h 18 min before delivery
Body temperature 38.6 °C
Blood test (WBC 16400/μL, CRP≤0.1 mg/dL)

1 h 33 min before delivery
Cervical dilatation 3 cm

Before delivery



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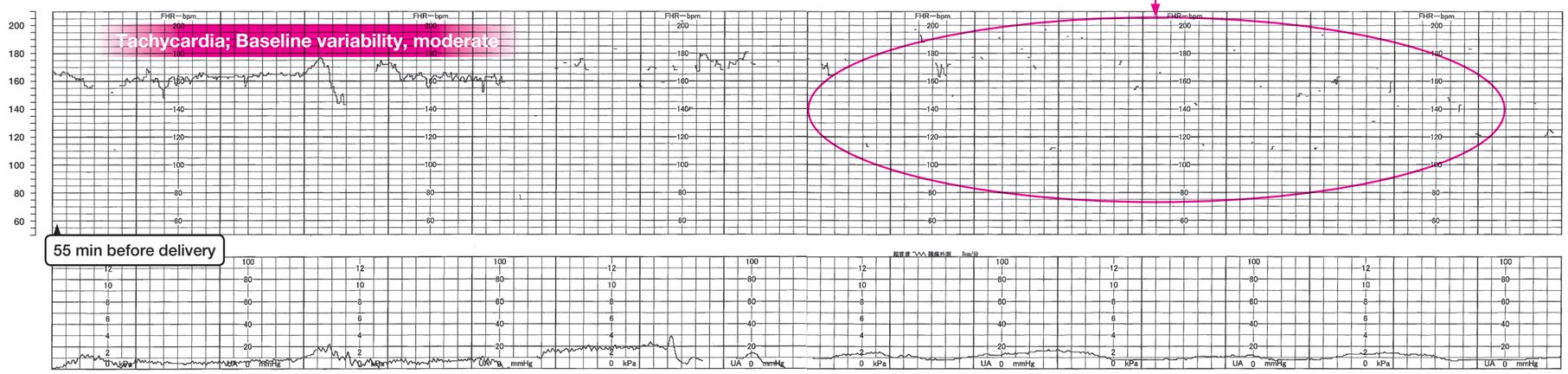

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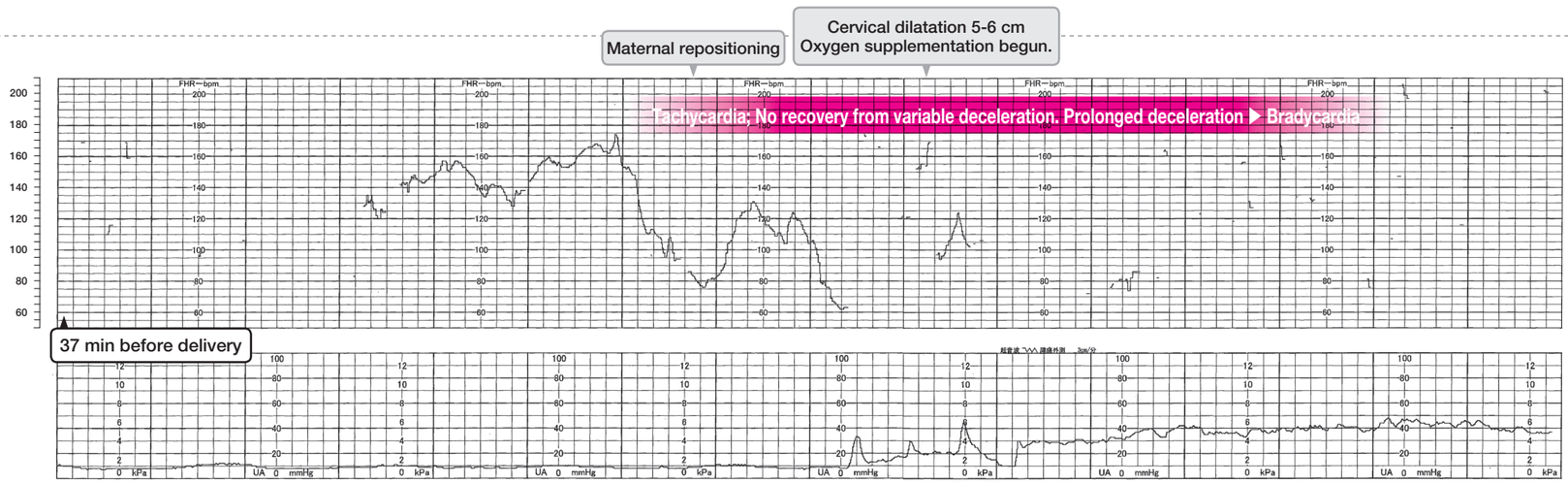


22 min later, baby was delivered by cesarean section.

Cautions in interpretation

The FHRs were not recorded.
The Doppler probe should be placed at the appropriate site for accurate recording.

Findings associated with delivery

- Umbilical artery pH was 6.5 level
- Newborn course:
  Apgar score; 1 at 1 min
  4 at 5 min
- Operative findings:
  Bloody ascites; placenta prolapsed into the abdominal cavity from the lower segment of the ruptured uterus.
- Findings of the amniotic fluid, umbilical cord, and placenta:
  Pale bloody amniotic fluid; Entanglement of the umbilical cord; Clots
  Histopathological examination ▶ No information

- Causes of the development of cerebral palsy in the cause analysis report
  Uterine rupture

Case 20 (Uteroplacental circulatory disturbance associated with pregnancy-induced hypertension)

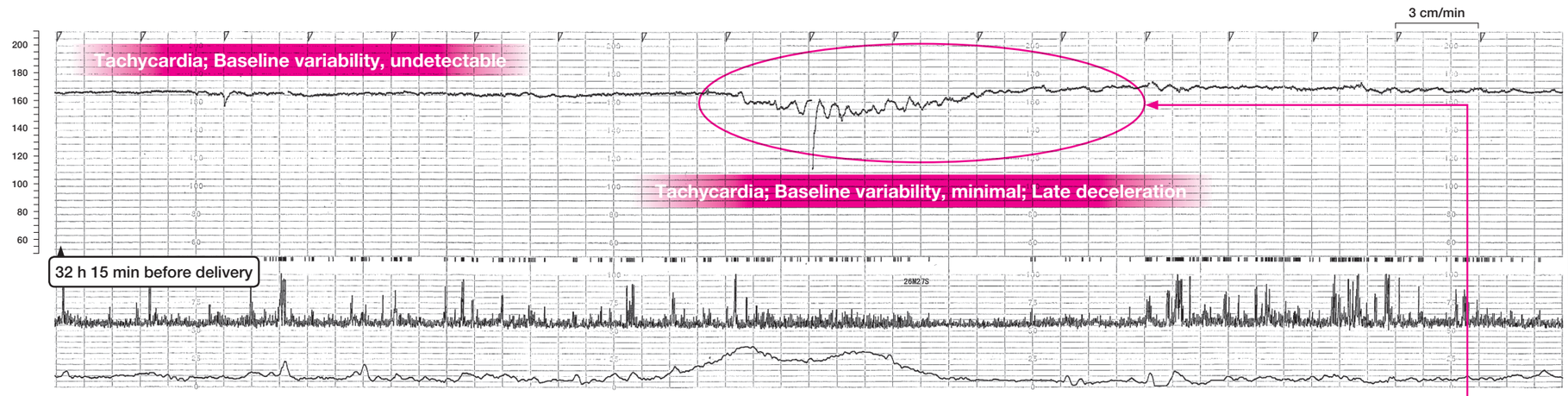
Summary

Gestational weeks 35 weeks' gestation **Risk factors** Pregnancy-induced hypertension (superimposed preeclampsia); Fetal growth restriction **Birth weight** 2000 g level

Delivery course The woman was admitted to hospital for the management of pregnancy-induced hypertension. ▶ Cesarean section was performed because of suspected HELLP syndrome.

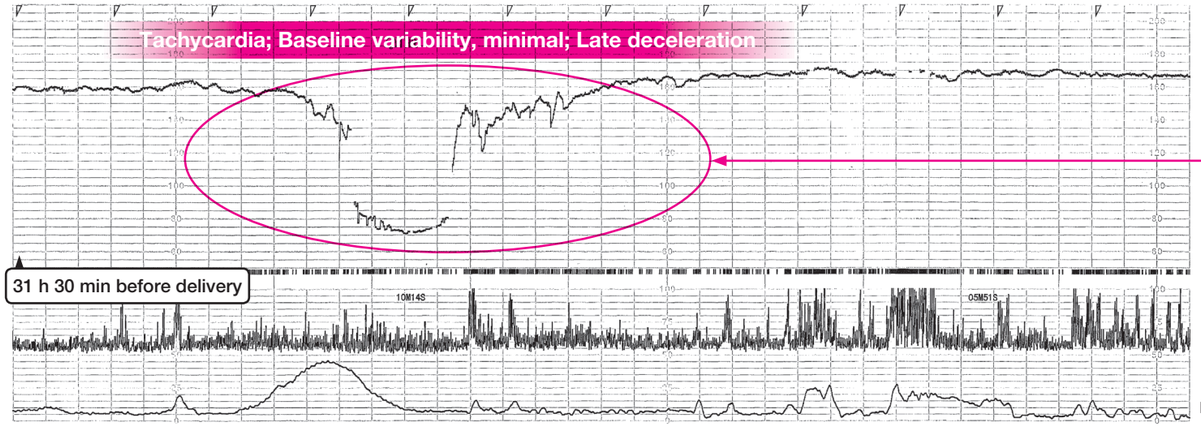
On admission

32 h 45 min before delivery
BP 216/108 mmHg



Approximately 31 h 37 min before delivery
BP 194-226/108-148 mmHg
She received an oral antihypertensive drug.

During hospitalization



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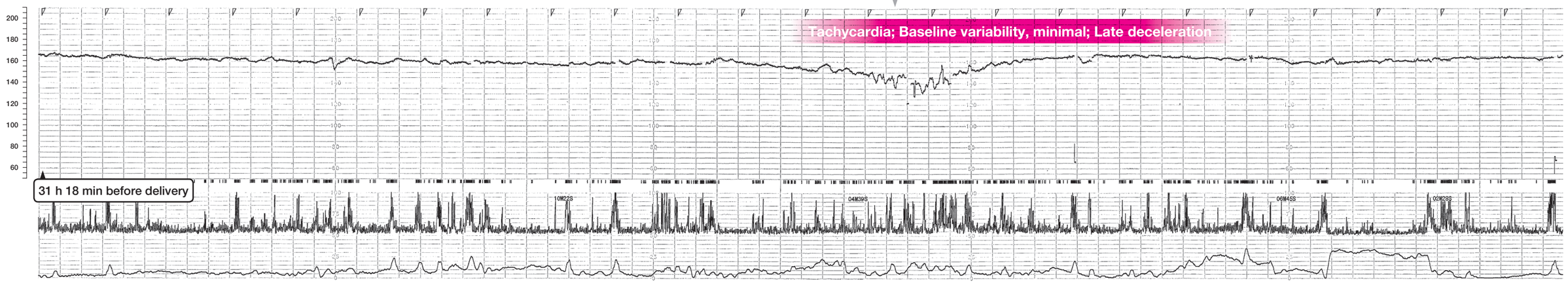
Cautions in interpretation

On the basis of a gradual decrease that occurred after the peak of the uterine contraction and the deceleration patterns before and after this, this pattern corresponds to a late deceleration.
When this deceleration appears alone, however, it may be considered as a variable deceleration because of a sudden, abrupt decline during the decrease or a prolonged deceleration on account of its duration.

Cautions in interpretation

Since a gradual decrease of FHR occurred after the peak of the contraction, this FHR pattern corresponds to a late deceleration. It also is a prolonged deceleration, based on its duration.

She received an oral antihypertensive drug.



During hospitalization

30 h 25 min before delivery

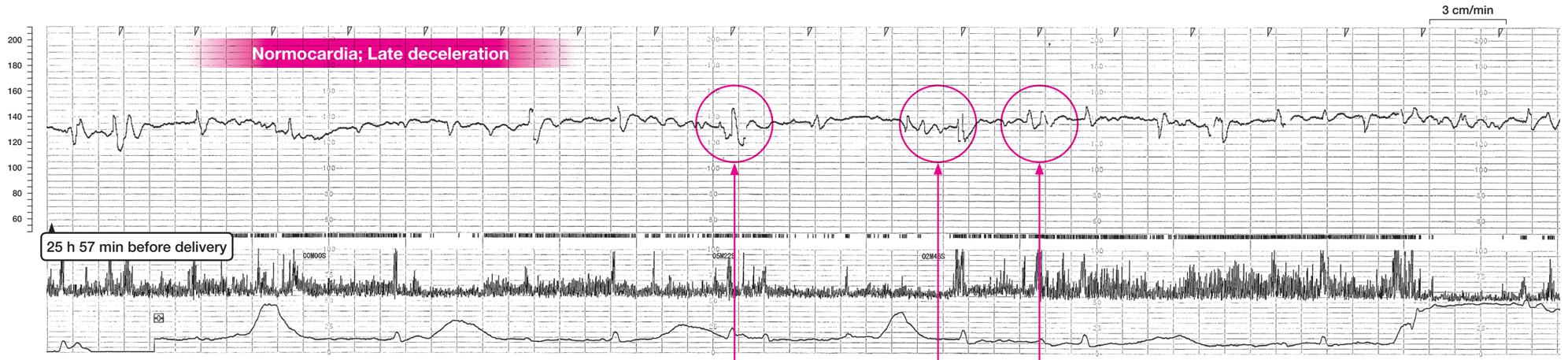
Drip infusion of freeze-dried concentrated human antithrombin III was administered.
No abnormal findings on brain MRI

Approximately 28 h 10 min before delivery

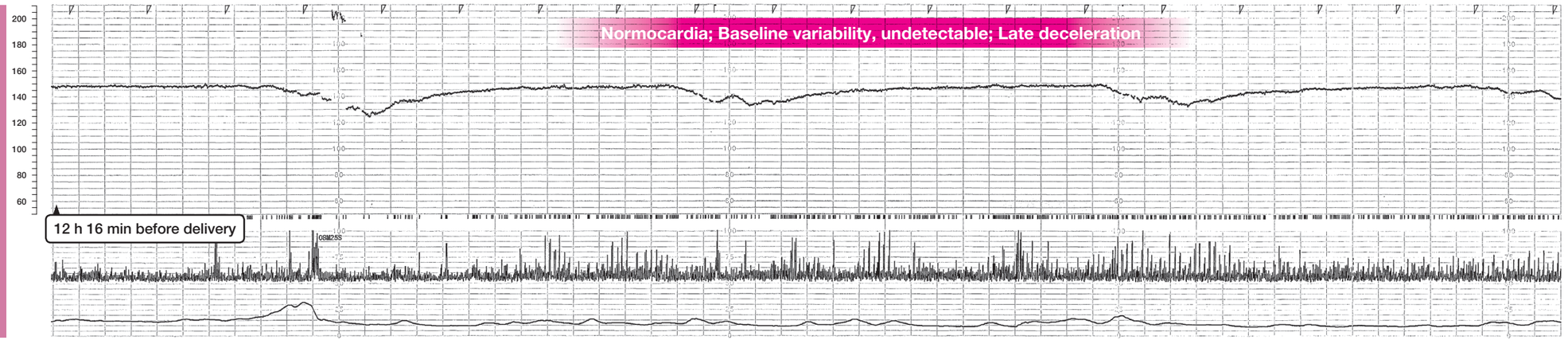
Headache developed. BP 200/140 mmHg

27 h 5 min before delivery

Drip infusion of an antihypertensive drug begun.
BP 120-144/88-114 mmHg



During hospitalization



Cautions in interpretation

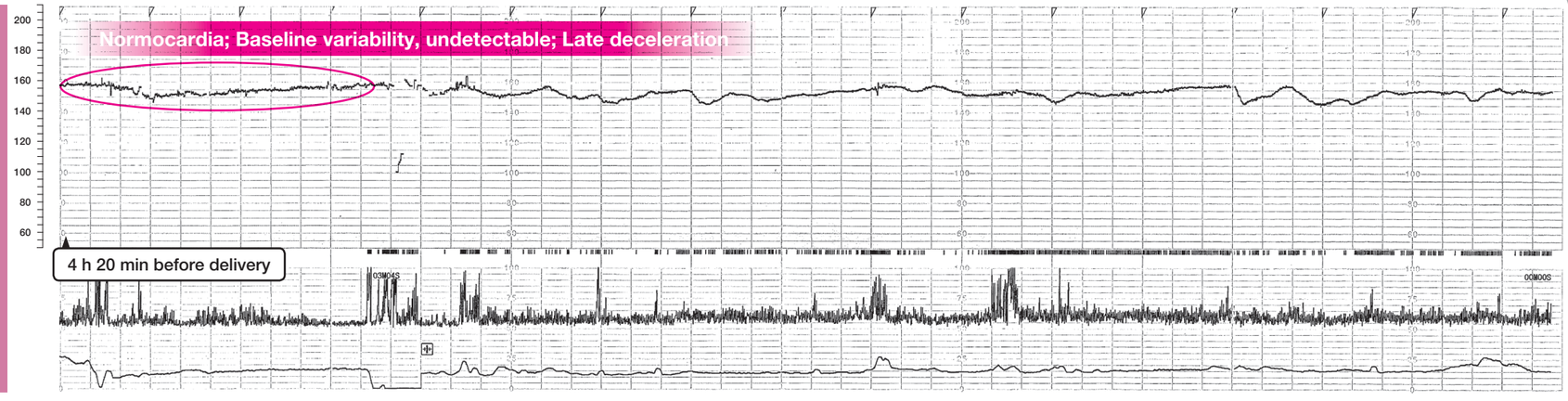
A triangular and sharp-wave pattern was observed. This is referred to as the checkmark pattern.
This pattern is observed on rare occasions after asphyxia and is considered to be associated with gasping respiration of the fetus.

11 h 40 min before delivery

BP 116/72 mmHg
Drip infusion of freeze-dried concentrated human antithrombin III was administered.

BP 150/98 mmHg
She had abdominal distention, nausea, vomiting, stomachache, and generalized edema.

Before delivery



4 h 4 min later, baby was delivered by cesarean section.

Findings associated with delivery

- Umbilical artery pH was 7.0 level
- Newborn course:
  Apgar score; 4 at 1 min
  5 at 5 min
- Findings of the amniotic fluid, umbilical cord, and placenta:
  Meconium staining noted.
  Marginal insertion of the cord
  Histopathological examination ▶ A several small infarctions

- Causes of the development of cerebral palsy in the cause analysis report
  Uteroplacental circulatory disturbance associated with pregnancy-induced hypertension

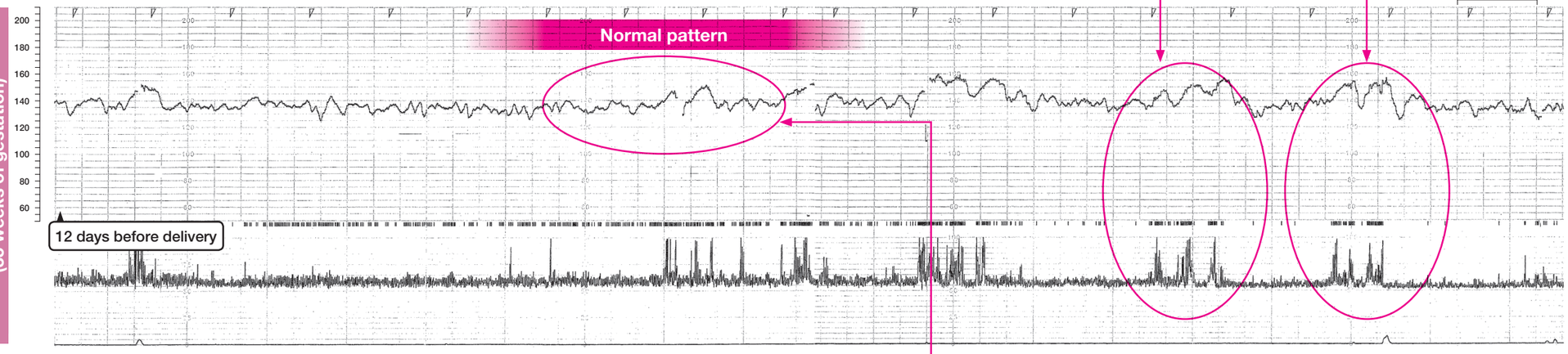
Case 21 (Fetomaternal transfusion syndrome- 1)

Summary

Gestational weeks 36 weeks' gestation **Risk factors** None **Birth weight** 2600 g level

Delivery course The woman visited the hospital as she became aware of decreased fetal movement. ▶ Cesarean section was performed based on the diagnosis of non-reassuring fetal status.

At the outpatient prenatal care (35 weeks of gestation)

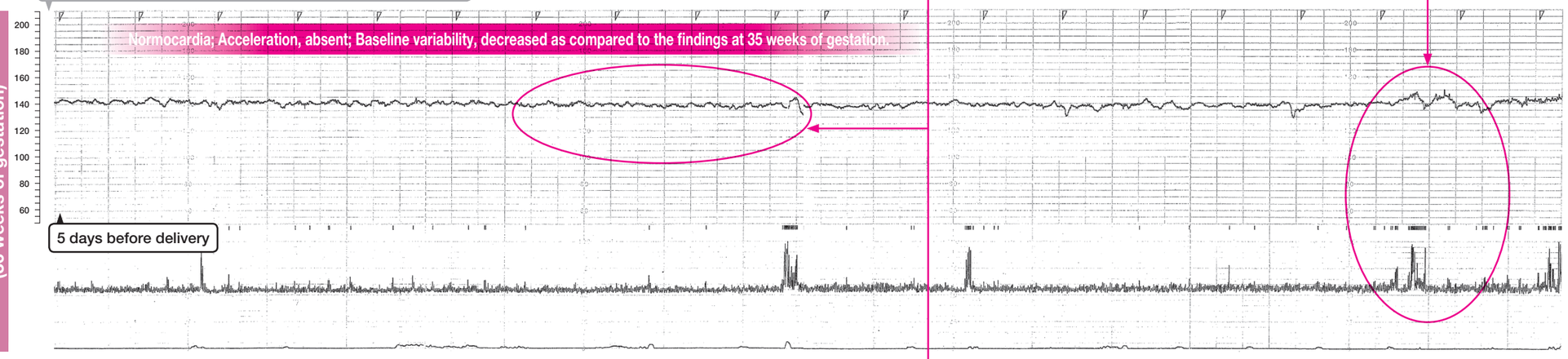


Cautions in interpretation

The important findings are a decreased fetal movements and a decreased frequency of accelerations associated with fetal movements in the comparison of the data between 35 (first column) and 36 (second column) weeks of gestation.

Uterine cervix not yet opened. Fetal movements were detected.

At the outpatient prenatal care (36 weeks of gestation)

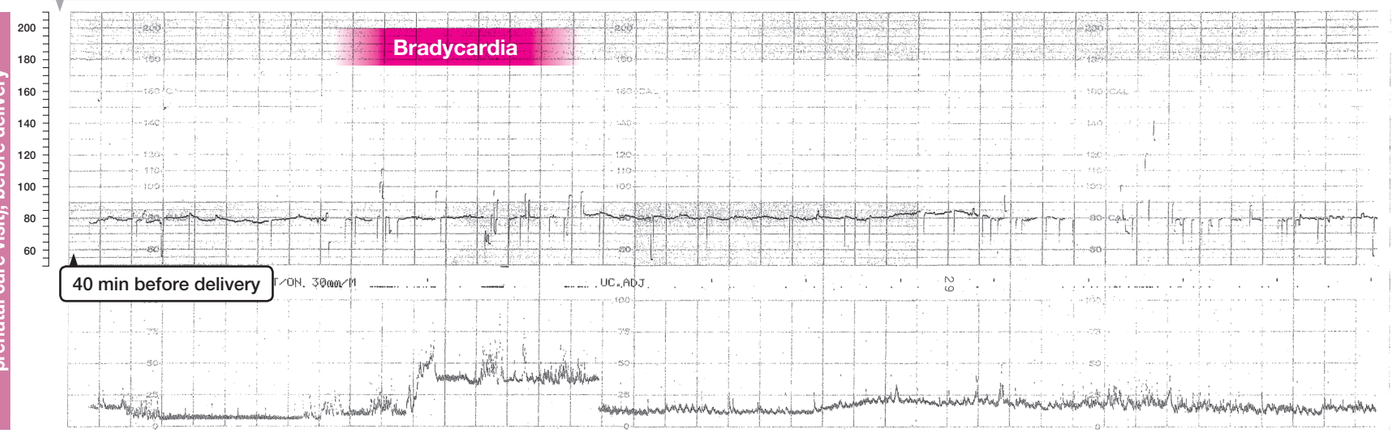


Cautions in interpretation

The patterns of the baseline variability and the presence or absence of accelerations are different in the comparison of the data between 35 (first column) and 36 (second column) weeks of gestation. To detect these differences is the key to correct interpretation.

She visited the hospital as she became aware of decreased fetal movements 2-3 days earlier.

On admission (5 days after the last outpatient prenatal care visit), before delivery



26 min later, baby was delivered by cesarean section.

Findings associated with delivery

- Umbilical artery pH was 6.9 level
- Newborn course:
  Apgar score; 1 at 1 min
  1 at 5 min
  Hemoglobin 2 g/dL level
- Findings of the amniotic fluid, umbilical cord, and placenta:
  Histopathological examination ▶ No abnormal findings

- Causes of the development of cerebral palsy in the cause analysis report
  Fetomaternal transfusion syndrome

Case 22 (Fetomaternal transfusion syndrome- 2)

Summary

Gestational weeks 36 weeks' gestation **Risk factors** Threatened preterm delivery **Birth weight** 2200 g level

Delivery course The woman was admitted to hospital because of onset of labor and rupture of membranes. ▶ Under the diagnosis of non-reassuring fetal status, the baby was delivered vaginally using Kristeller's maneuver (uterine fundal pressure).

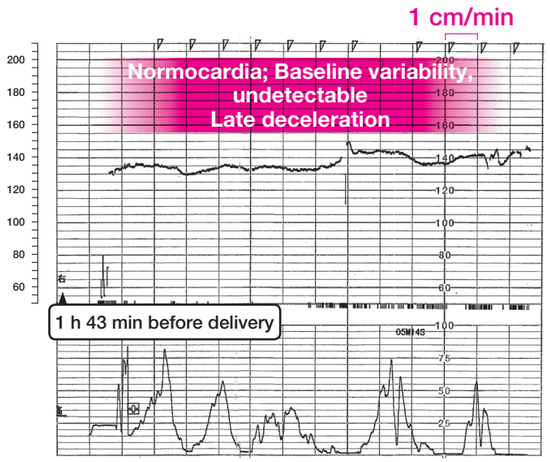
On admission

Approximately 4 h 24 min before delivery

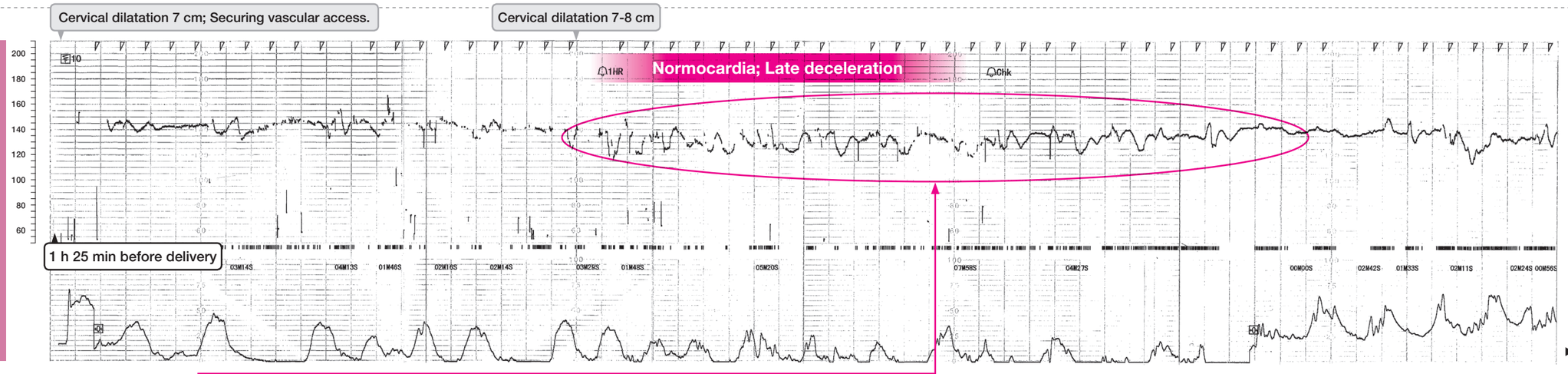
She had felt uterine contractions.

Approximately 2 h 24 min before delivery

Onset of labor and the rupture of membranes occurred. She visited the hospital.
Cervical dilatation one fingertip dilated
Amniotic fluid pocket 44 mm



Before delivery



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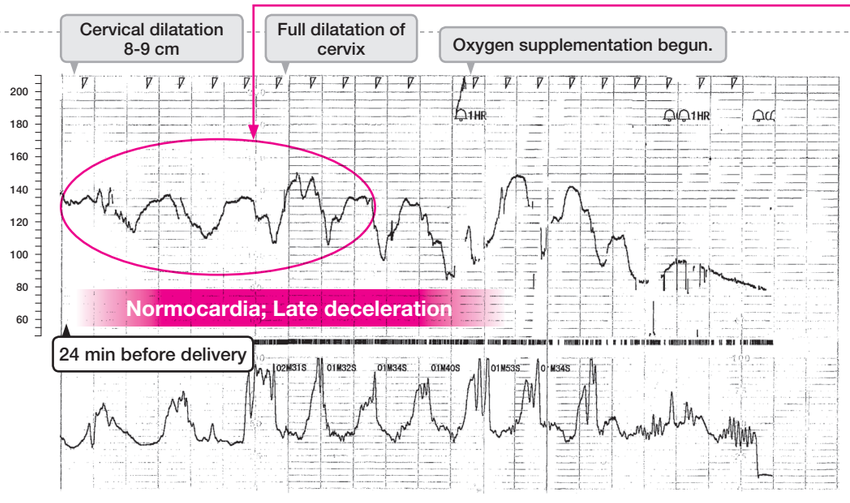


4 min later, baby was delivered vaginally using Kristeller's maneuver (uterine fundal pressure).

Cautions in interpretation

With a paper speed of 1 cm/min, it is difficult to assess the baseline variability and interpret late decelerations.
Late decelerations occurred frequently although trace may mistakenly be considered as a baseline variability.
Because of the many noises and the paper speed of 1 cm/min, the baseline variability cannot be interpreted accurately.

Findings associated with delivery

- Umbilical cord blood gas analysis: No information
- Newborn course:
  Apgar score; 6 at 1 min
  6 at 5 min
  Hemoglobin 7 g/dL level
- Findings of the amniotic fluid, umbilical cord, and placenta:
  Polyhydramnios
  Histopathological examination ▶ No information

- Causes of the development of cerebral palsy in the cause analysis report
  Fetomaternal transfusion syndrome

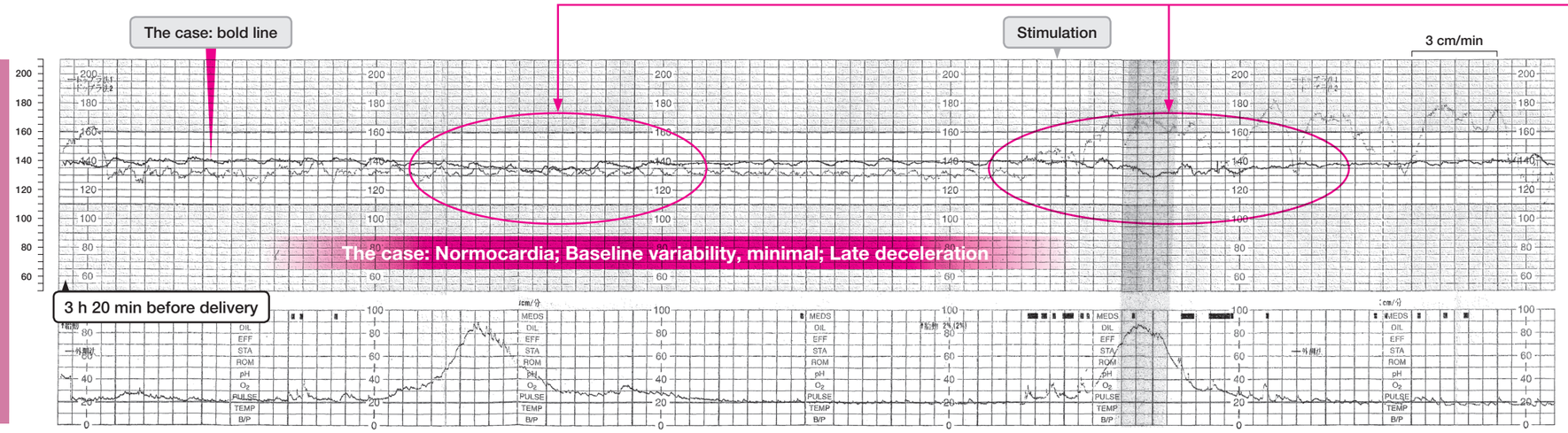
Case 23 (Fetomaternal transfusion syndrome- 3)

Summary

Gestational weeks 38 weeks' gestation **Risk factors** Twin pregnancy, Threatened preterm delivery, History of myomectomy **Birth weight** 2500 g level

Delivery course The woman was admitted to hospital for the management of threatened preterm delivery. ▶ Emergency cesarean section was performed based on the diagnosis of non-reassuring fetal status on the scheduled day of the planned cesarean section.

During hospitalization



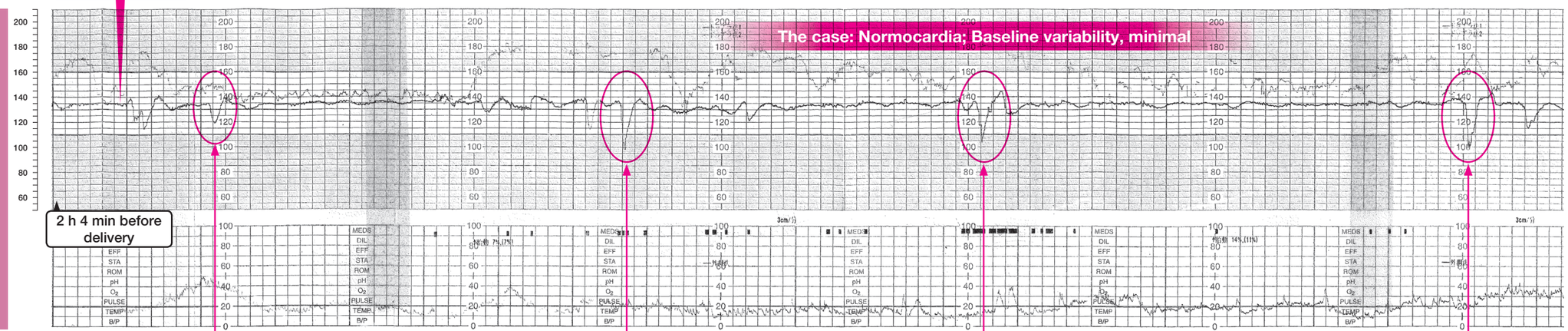
Cautions in interpretation

Caution is needed to avoid missing the shallow late decelerations.

2 h 15 min before delivery

No abnormal findings in the placenta or blood flow in the umbilical cord were detected on ultrasonography

During hospitalization



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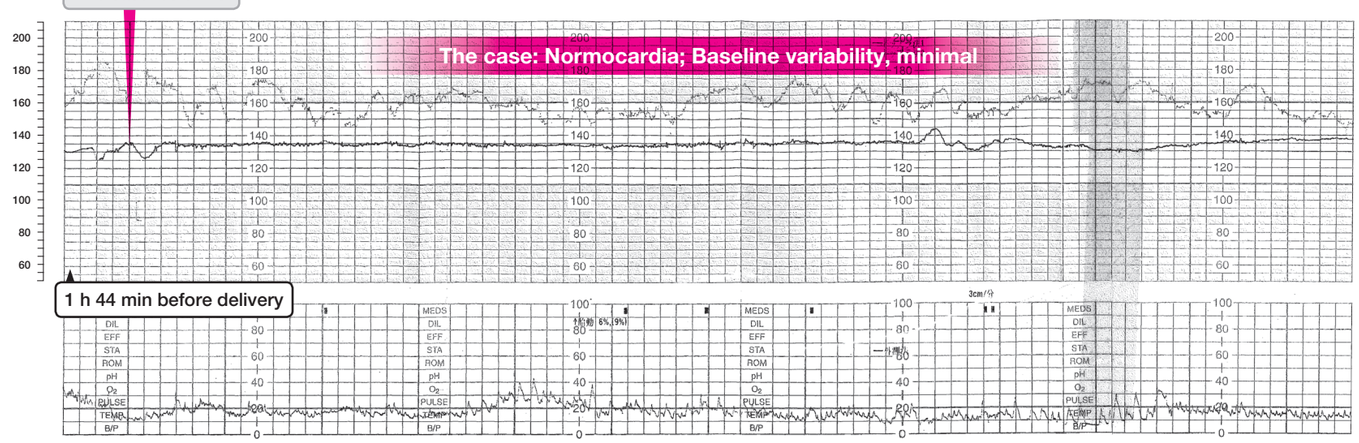
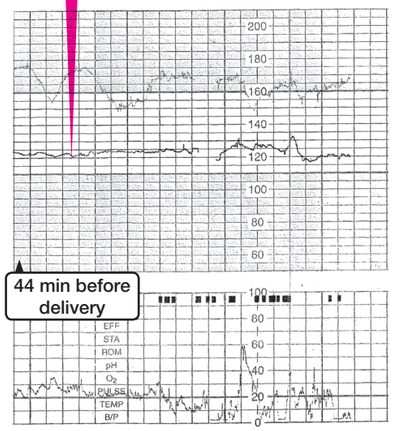


Cautions in interpretation

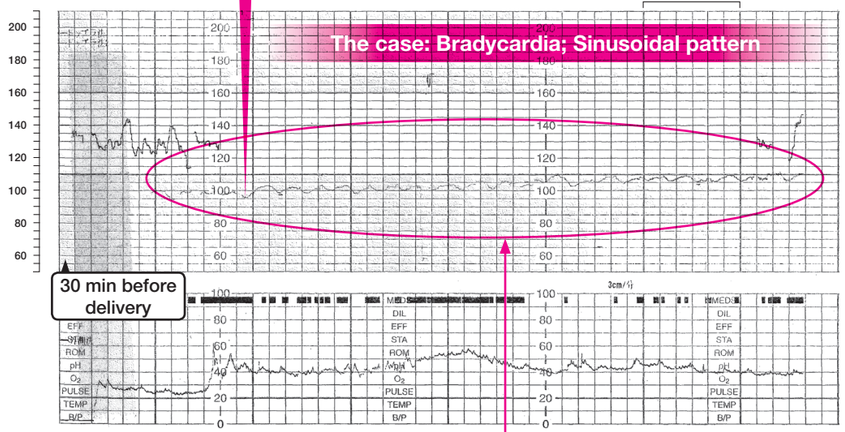
Non-periodic decelerations which were not associated with uterine contractions noted frequently.
These patterns were not variable decelerations because variable decelerations are defined as "those lasting 15 seconds or more and less than 2 min in duration." They meet the definition of the baseline variability, even though they were different from the typical baseline variability.
The physiological significance of these non-periodic decelerations is uncertain.

Before delivery

The case: bold line



The case: thin line



22 min later, baby was delivered by cesarean section.

Findings associated with delivery

- Umbilical cord blood gas analysis: No information
- Newborn course:
  Apgar score; 1 at 1 min
  2 at 5 min
  Hemoglobin 2 g/dL level
- Findings of the amniotic fluid, umbilical cord, and placenta:
  Pale bloody amniotic fluid; white placental infarcts
  Histopathological examination ▶ Placenta and umbilical cord of the case were pale because of insufficient blood flow as compared to that of the other twin.

- Causes of the development of cerebral palsy in the cause analysis report
  Fetomaternal transfusion syndrome

Cautions in interpretation

The trace was determined to be a sinusoidal pattern because it is a smooth curve with an amplitude of 5-10 beats per minute and a cycle frequency of 3-4 per minute, although the definition that persistence is 10 min or longer was not fulfilled.

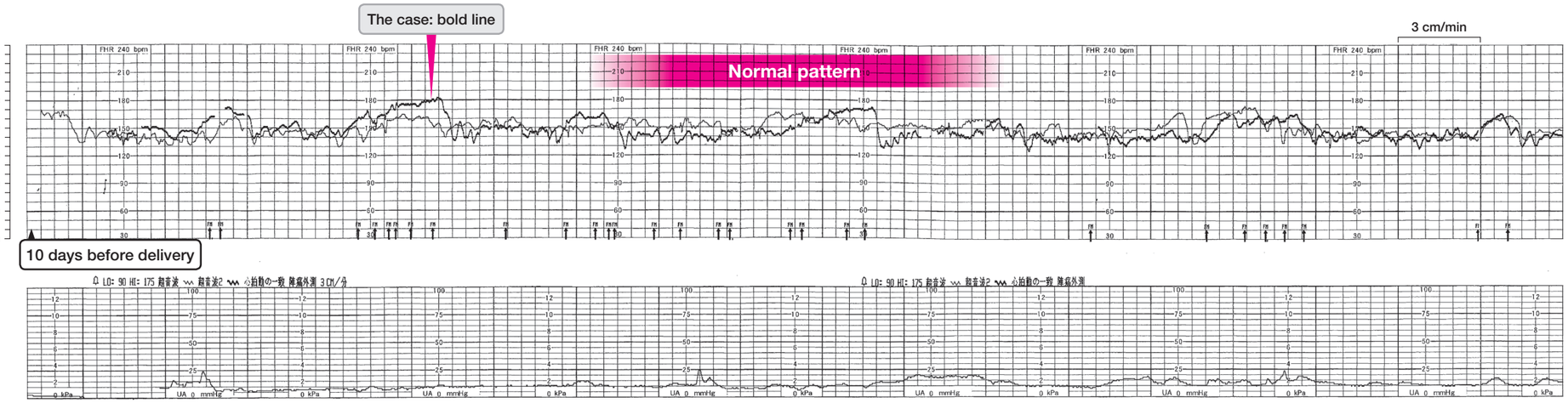
Case 24 (Twin-to-twin transfusion syndrome)

Summary

Gestational weeks 35 weeks' gestation **Risk factors** Twin pregnancy; Threatened preterm delivery **Birth weight** 1700 g level

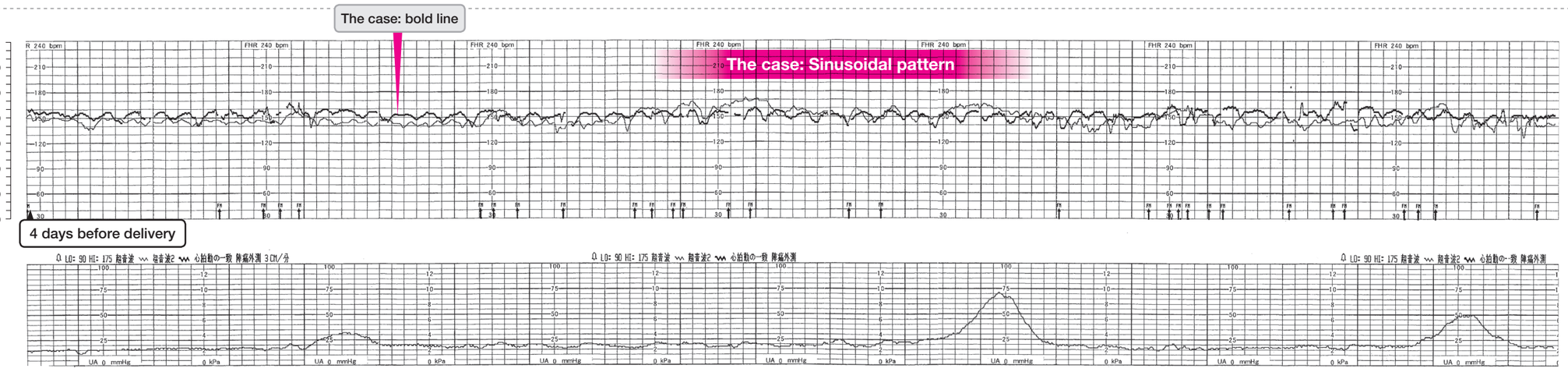
Delivery course The woman was admitted to hospital for the management of twin pregnancy. ▶ Cesarean section was performed based on the diagnosis of non-reassuring fetal status.

During hospitalization (33 weeks of gestation)

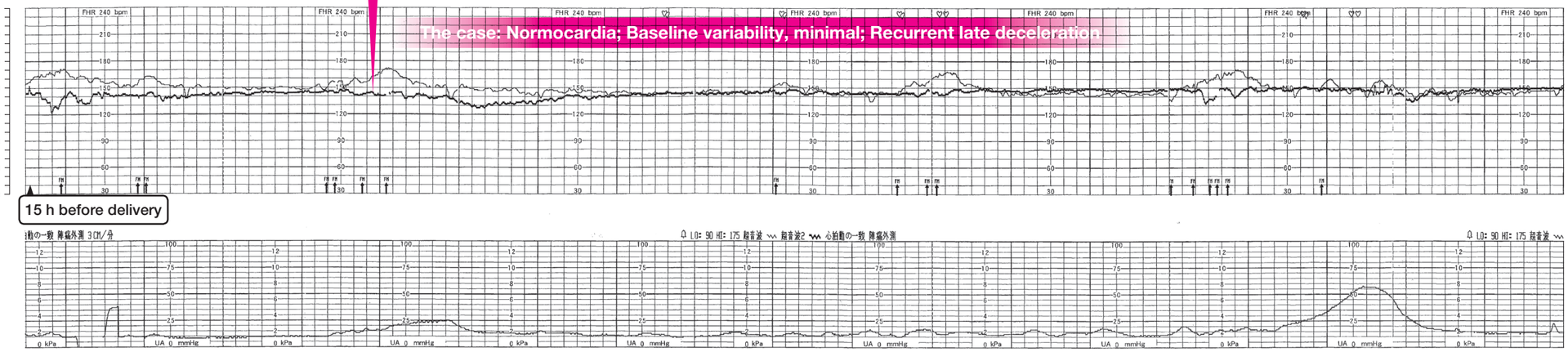


7 days before delivery
No abnormal findings on ultrasonography

During hospitalization (34 weeks of gestation)



During hospitalization



8 h 27 min before delivery
No abnormal findings on ultrasonography
Active fetal movements

The case: bold line

3 cm/min

The FHR monitoring was interrupted.

During hospitalization

The case: Normocardia; Baseline variability, undetectable; Recurrent late deceleration

4 h 5 min before delivery

An electronic fetal monitor was placed again.

Doppler ultrasound revealed an FHR of 80 bpm.

The case: thin line

Oxygen supplementation begun.

Thereafter, bradycardia of the case was confirmed on ultrasonography.

The other twin: bold line

Before delivery

The case: Bradycardia

The case: Bradycardia

59 min before delivery

42 min later, baby was delivered by cesarean section.

Findings associated with delivery

- Umbilical cord blood gas analysis of the case: No information
- Newborn course of the case
  Apgar score; 0 at 1 min
  1 at 5 min
  Hemoglobin 2 g/dL level
- Findings of the amniotic fluid, umbilical cord, and placenta:
  Meconium staining; Significant white infarcts
  No definite vascular anastomosis was found by milk testing.
  Histopathological examination ▶ Anemic and thick placenta
  No vascular anastomosis was found on the surface of the placenta, but may have been present in the placental parenchyma.

- Causes of the development of cerebral palsy in the cause analysis report
  Twin-to-twin transfusion syndrome

Case 25 (Maternal heart failure)

Summary

Gestational weeks 34 weeks' gestation

Risk factors HELLP syndrome, perinatal cardiomyopathy, threatened preterm delivery

Birth weight 2300 g level

Delivery course The woman was admitted to the transport source birthing facility because of cough, abdominal distention and vaginal bleeding. ▶ Mother was transported because of thrombocytopenia, abnormal liver function and the suspicion of HELLP syndrome. ▶ Cesarean section was performed based on the diagnosis of maternal heart failure and non-reassuring fetal status.

During hospitalization at the transport source birthing facility

Approximately 11 days before delivery

Common cold-like symptoms developed.

6 h 14 min before delivery

Cough, abdominal distention, and a small amount of vaginal bleeding occurred.
She was admitted to the transport source birthing facility.
The body temperature 35.0 °C
Blood test (WBC 20.4 × 10^3/μL, RBC 579 × 10^4/μL, hemoglobin 15.0 g/dL, platelet 1.5 × 10^4/μL, CRP 7.14 mg/dL, AST 250 IU/L, ALT 177 IU/L, LDH 815 IU/L)

4 h 34 min before delivery

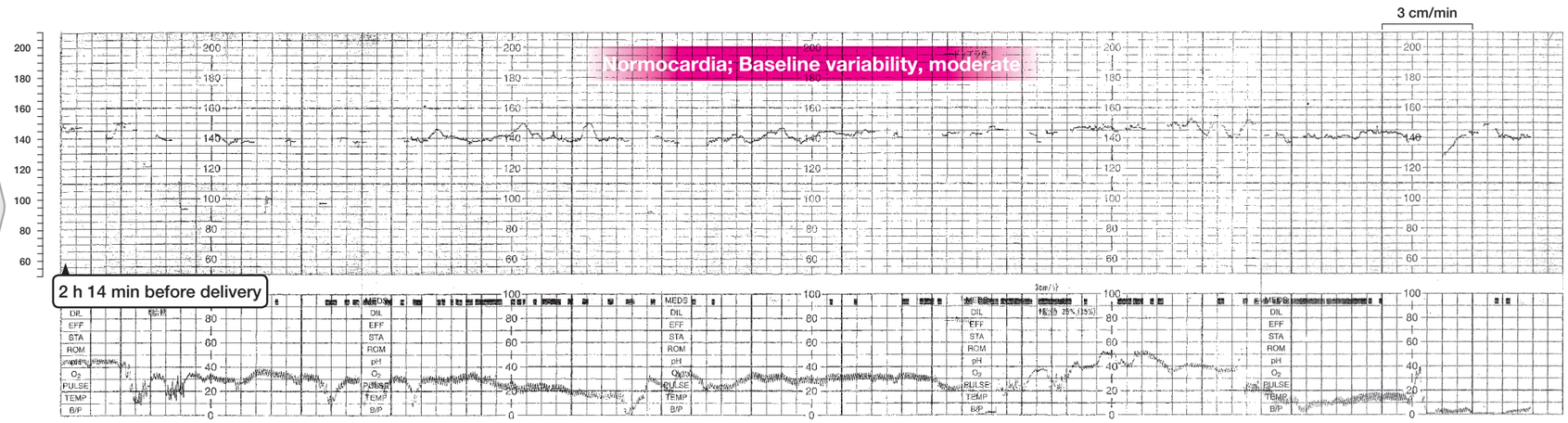
Drip infusion of ritodrine hydrochloride and an antibiotics begun.

2 h 34 min before delivery

Transcutaneous arterial blood oxygen saturation decreased to 80-84%. Oxygen supplementation begun.
Body temperature at 35.0 °C level, Pulse rate 100-130 bpm
BP 80/40 mmHg level

2 h 19 min before delivery

No definite findings of placental abruption on ultrasonography



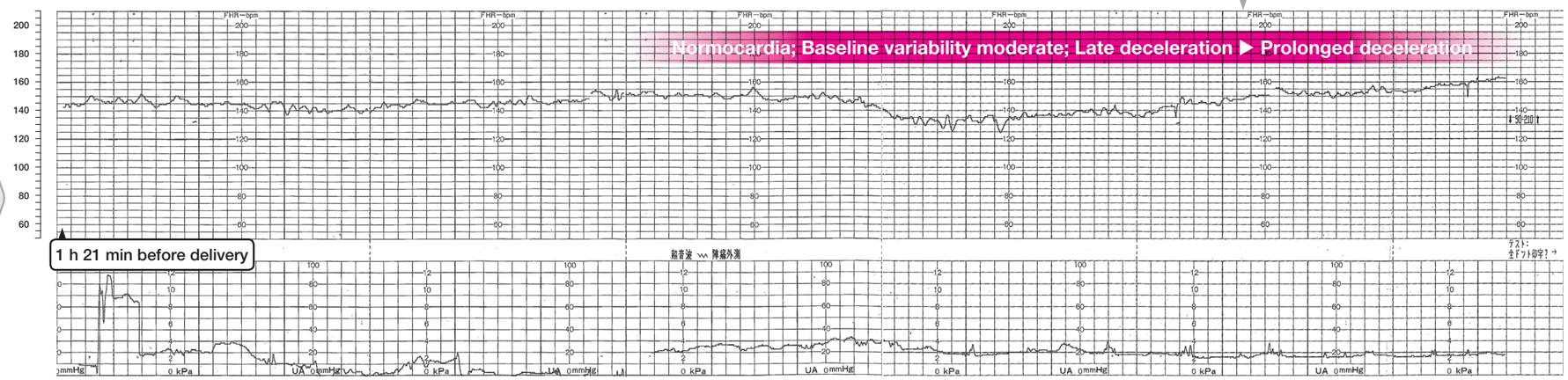
Mother was transported because of thrombocytopenia, abnormal liver function and the suspicion of HELLP syndrome.

Echocardiography performed by a specialist of cardiovascular medicine: ejection fraction about 20%; the findings were consistent with those of dilated cardiomyopathy.

On admission to the birthing facility, before delivery

1 h 29 min before delivery

Body temperature at 35.5 °C, Pulse rate 140 bpm
BP 99/54 mmHg, Respiratory rate 30 times/min
Transcutaneous arterial blood oxygen saturation was 90-94%.
Facial pallor; Arterial blood gas analysis pH 7.40, PCO_2 20 mmHg, PO_2 76 mmHg
Normal amount of amniotic fluid and no thickening of the placenta on ultrasonography
Cervical dilatation one fingertip dilated
Chest X-ray: the cardio-thoracic ratio of 56%, increased vascular shadows, and no pleural effusion



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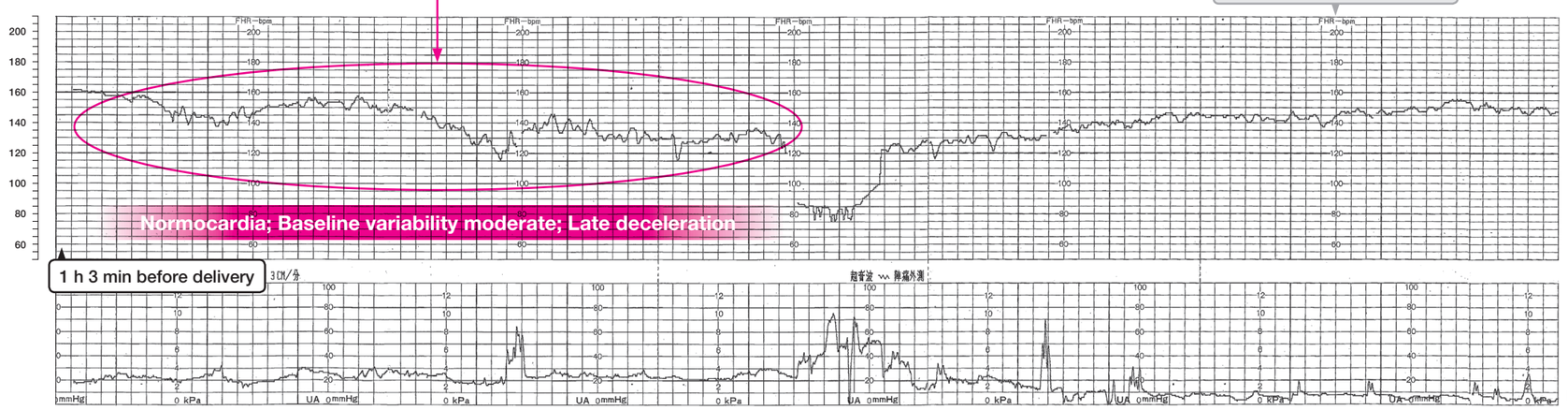
Furosemide was administered.



Cautions in interpretation

It could be inferred that recurrent late decelerations occurred from the point view of maternal poor condition although the uterine contraction patterns were unclear.

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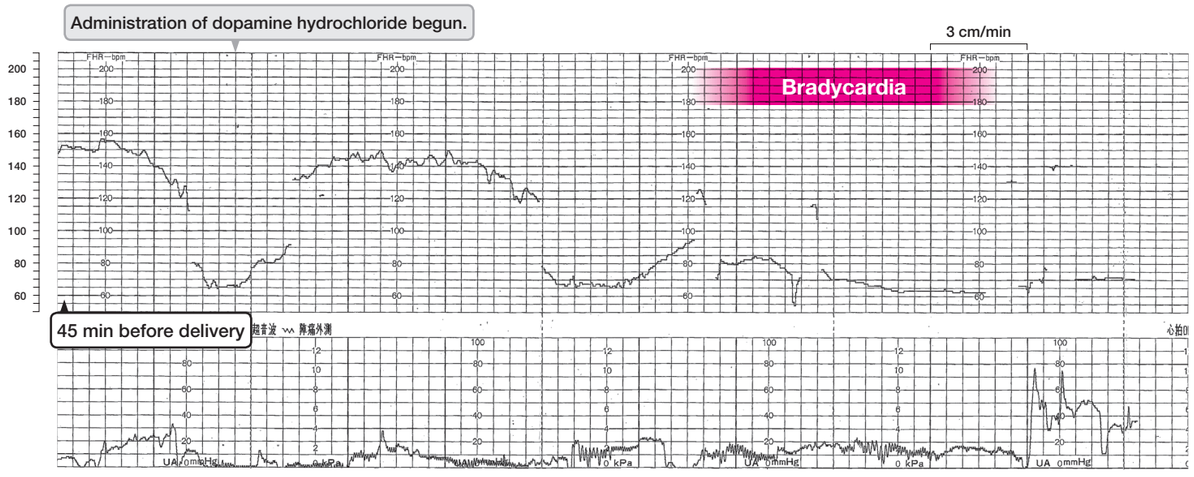


34 min later, baby was delivered by cesarean section.

Findings associated with delivery

- Umbilical artery pH was 6.6 level
- Newborn course:
  Apgar score; 1 at 1 min
  5 at 5 min
- Operative findings:
  Pale and ischemic uterus
- Findings of the amniotic fluid, umbilical cord, and placenta:
  Meconium staining; Infarcts; Clots
  Histopathological examination ▶ No abnormal findings

- Causes of the development of cerebral palsy in the cause analysis report
  Maternal heart failure

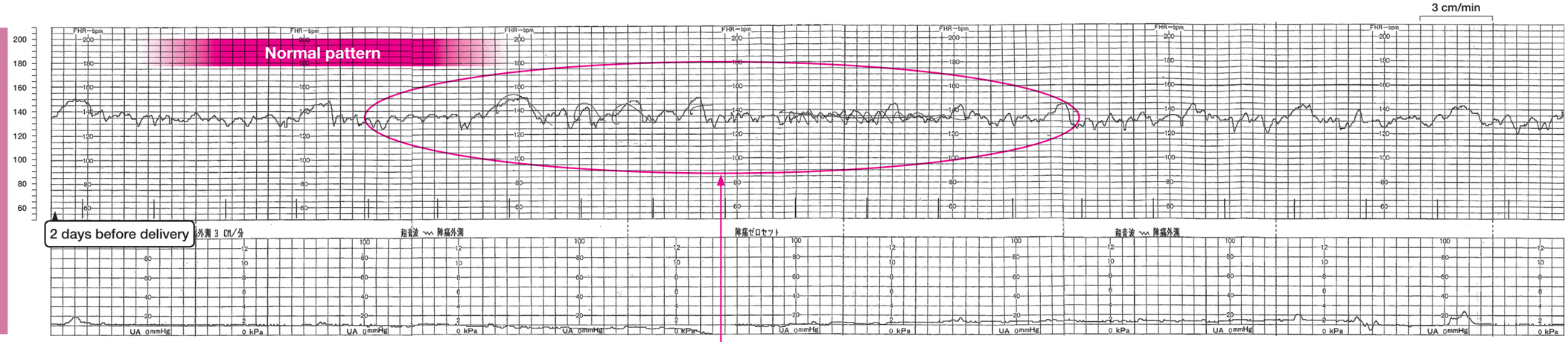
Case 26 (Intracranial hemorrhage of the baby)

Summary

Gestational weeks 37 weeks' gestation **Risk factors** Breech presentation, Threatened preterm delivery **Birth weight** 2700 g level

Delivery course The woman was admitted to hospital because of onset of labor. ▶ The baby was delivered vaginally with breech extraction.

At the outpatient prenatal care



On admission

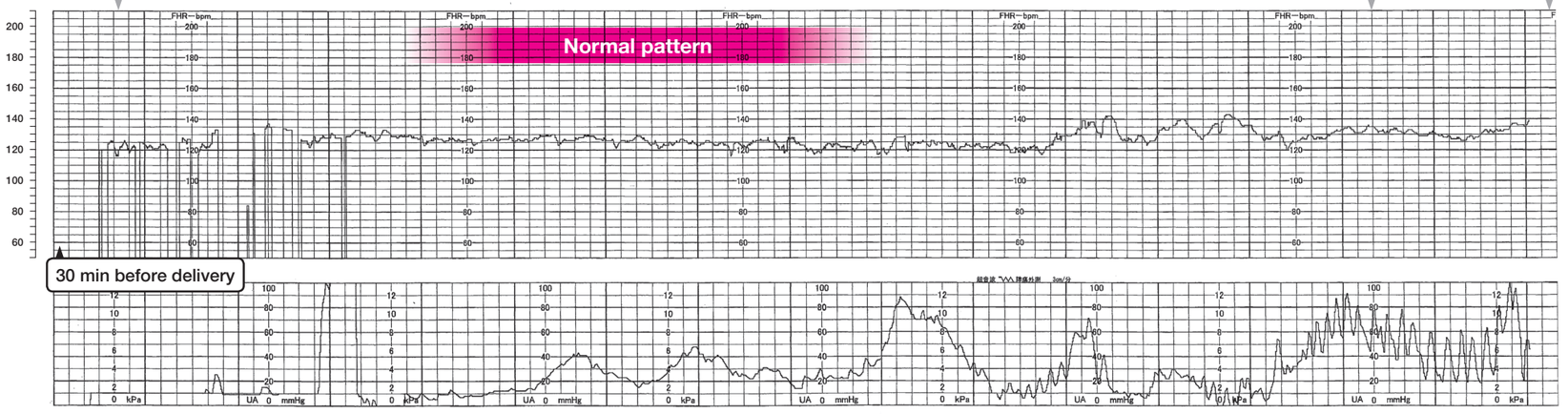
1 h 3 min before delivery
Onset of labor

38 min before delivery
Cervical dilatation 3 cm
Breech presentation (buttock first)

She felt the urge to push.

Rupture of membranes.

She was transferred to the delivery room.



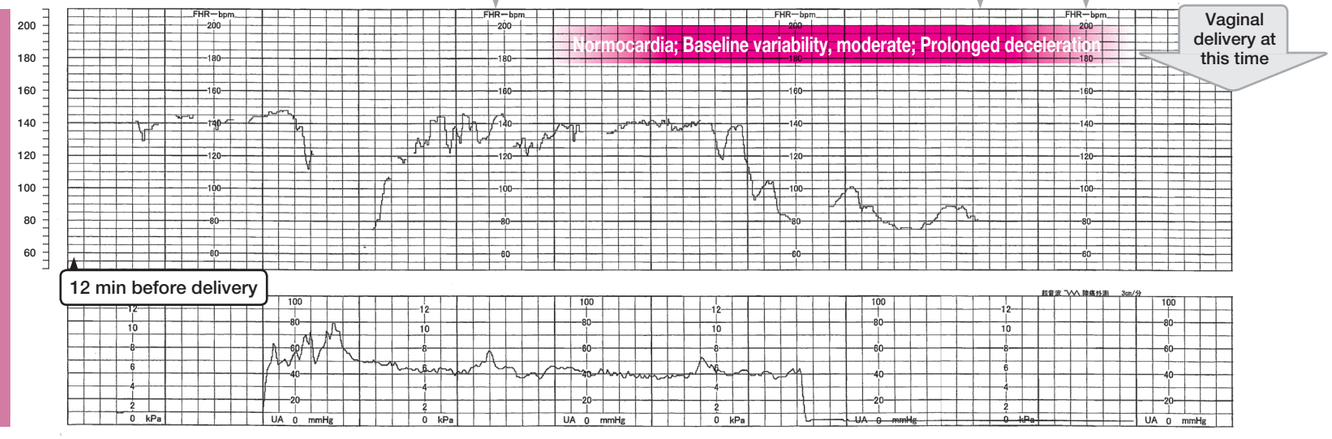
Before delivery

Full dilatation of cervix
Frank breech presentation

Oxygen supplementation begun.

Horizontal figure 8 method using Kristeller's maneuver (uterine fundal pressure)
Veit-Smellie maneuver

Vaginal delivery at this time



Cautions in interpretation

CTGs are as important records as medical charts. You can write on CTG copies for explanation to patients, but you should not write on original CTG records.

Findings associated with delivery

- Umbilical venous pH was 7.3 level.
- Newborn course:
  Apgar score; 4 at 1 min
  8 at 5 min
- Findings of the amniotic fluid, umbilical cord, and placenta:
  Histopathological examination ▶ No information

- Causes of the development of cerebral palsy in the cause analysis report
  Intracranial hemorrhage of the baby

Case 27 (Multiple factors- 1)

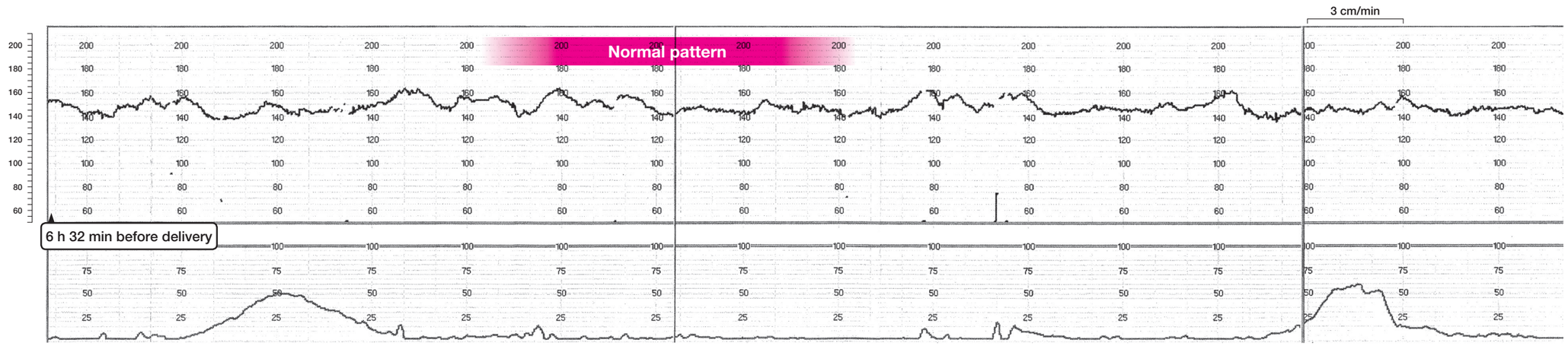
Summary

Gestational weeks 38 weeks' gestation **Risk factors** Pregnancy-induced hypertension(preeclampsia) **Birth weight** 2600 g level

Delivery course The woman visited the transport source birthing facility because of onset of labor and massive vaginal bleeding. ▶ Mother was transported because of the suspicion of placental abruption and rupture of the marginal venous sinus of the placenta. ▶ Baby was delivered vaginally.

At the outpatient prenatal care

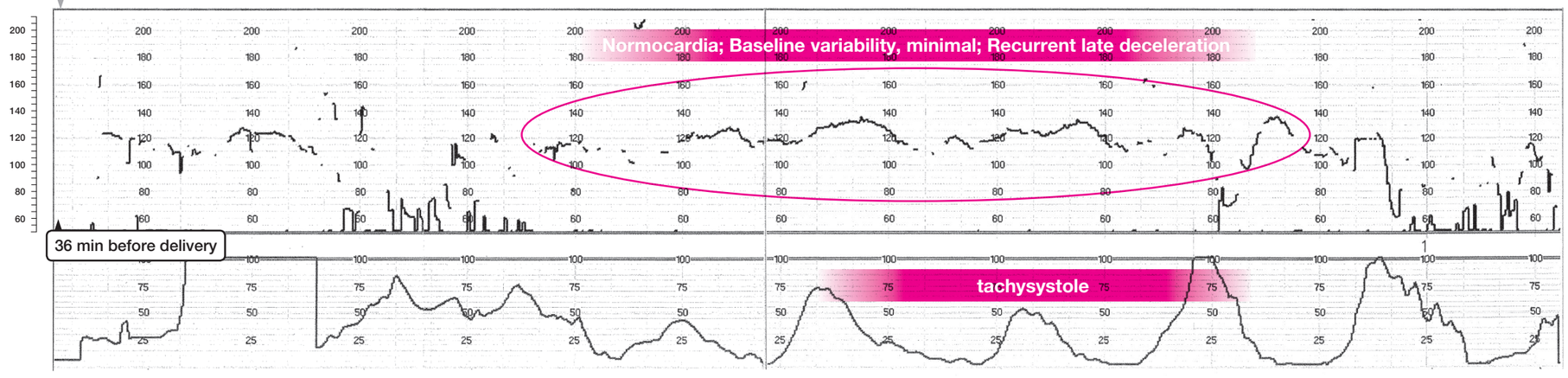
No abnormal findings on ultrasonography
Urinalysis (Proteinuria 4+)
BP 140/96 mmHg



Cervical dilatation 5 cm; Massive vaginal bleeding; No board-like abdominal rigidity; BP 94/69 mmHg; PR 103 bpm
Ultrasonography revealed a hematoma in the margin of the placenta in the lower uterine segment. Securing vascular access.

At the visit of the transport source birthing facility (on the day of the outpatient prenatal care)

1 h 59 min before delivery
Onset of labor
1 h 24 min before delivery
Massive vaginal bleeding

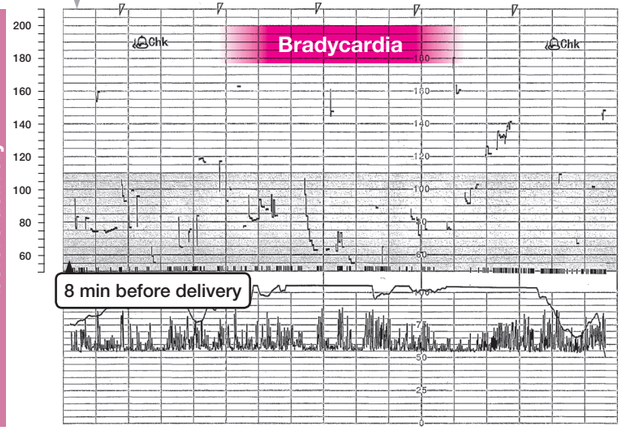


Mother was transported because of the suspicion of placental abruption and rupture of the marginal sinus of the placenta.
Cervical dilatation 8 cm

* tachysystole (see page 14)

On admission to the birthing facility, before delivery

Full dilatation of cervix
BP 144/- mmHg



3 min later, baby was delivered vaginally.

Findings associated with delivery

- Umbilical artery pH was 6.7 level.
- Newborn course:
  Apgar score; 1 at 1 min
  1 at 5 min
- Findings of the amniotic fluid, umbilical cord, and placenta:
  Entanglement of the umbilical cord; Marginal insertion of the cord; bloody amniotic fluid; Clots; Placental degeneration; Dark purple color
  Histopathological examination ▶ No information

- Causes of the development of cerebral palsy in the cause analysis report
  Multiple factors (placental abruption, maternal pre-shock)

Case 28 (Multiple factors- 2)

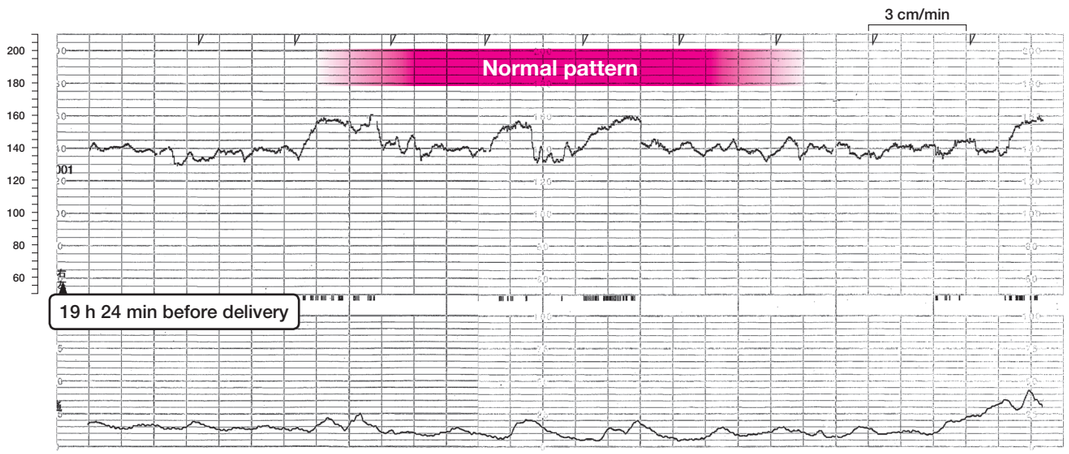
Summary

Gestational weeks 41 weeks' gestation **Risk factors** GBS colonization **Birth weight** 2900 g level

Delivery course The woman was admitted to hospital for induction of labor. ▶ Obstetric balloon (Metreurynter) was used for the induction of labor. ▶ Drip infusion of oxytocin was used for augmentation of labor. ▶ Vacuum extraction was performed based on the diagnosis of non-reassuring fetal status.

During hospitalization

25 h 4 min before delivery
Obstetric balloon (Metreurynter) was inserted.

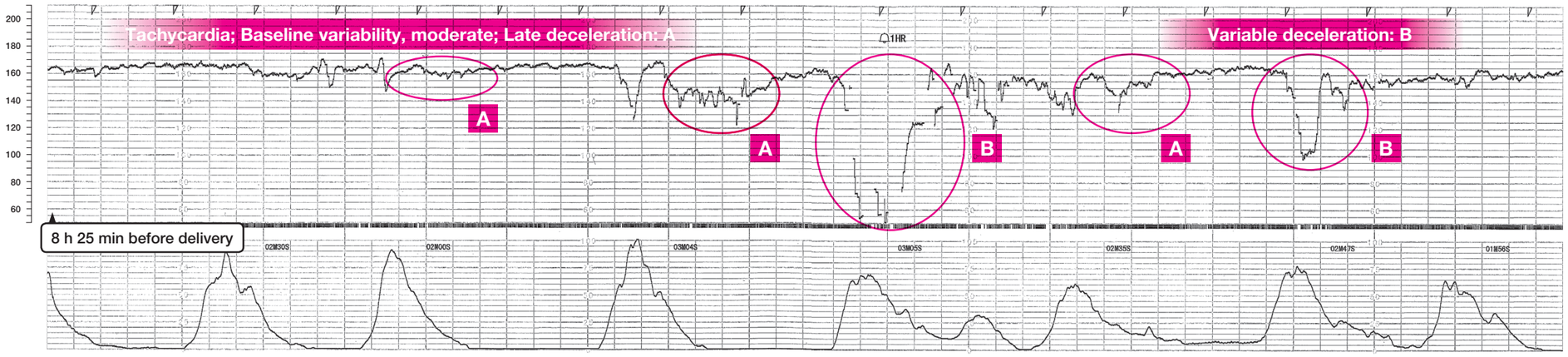


17 h 19 min before delivery
Obstetric balloon (Metreurynter) slipped down into the vagina. Onset of labor

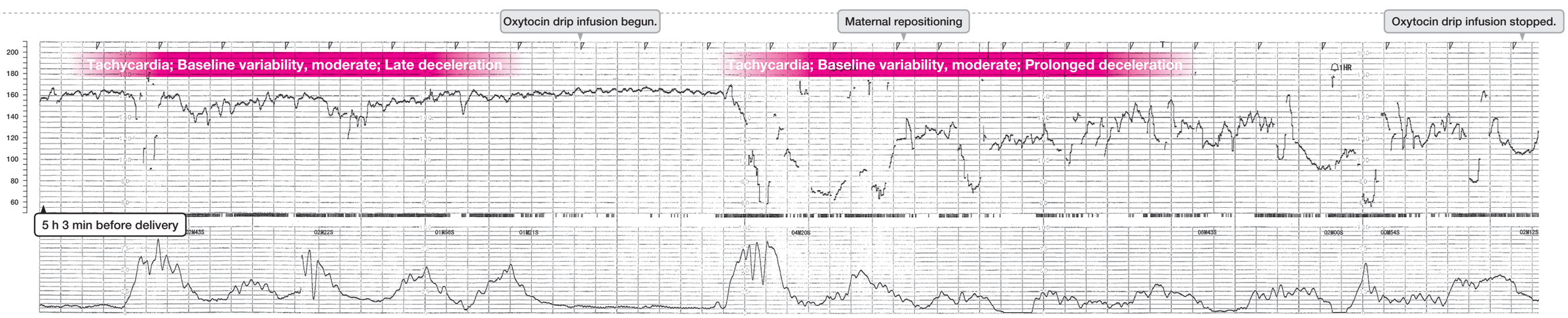
12 h 44 min before delivery
Securing vascular access. Blood test (WBC 14300/μL)

During hospitalization

8 h 49 min before delivery
Body temperature 37.7 ºC



During hospitalization



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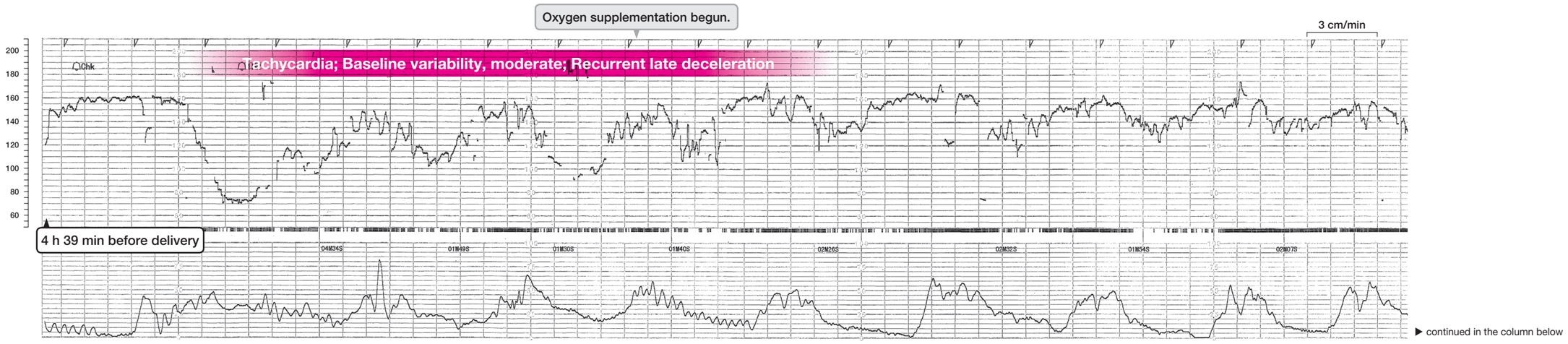

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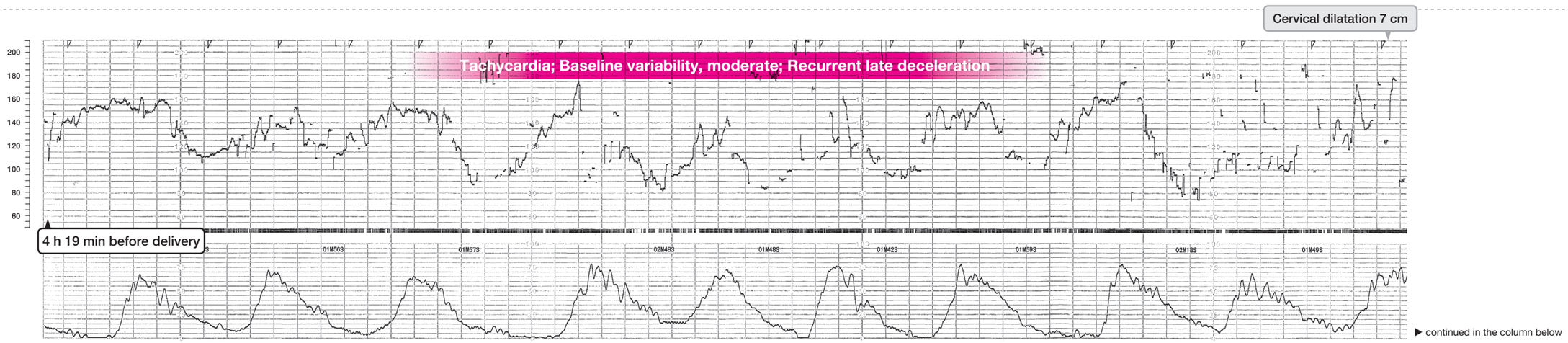

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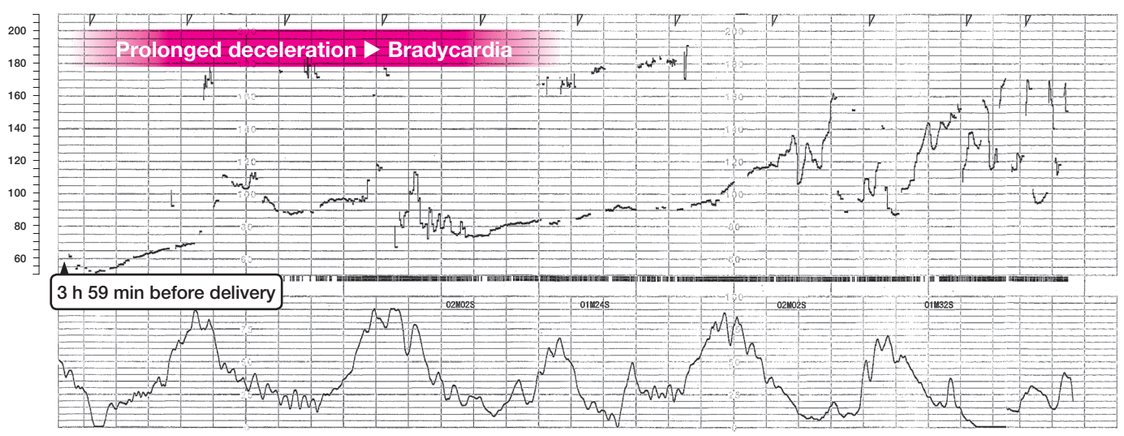
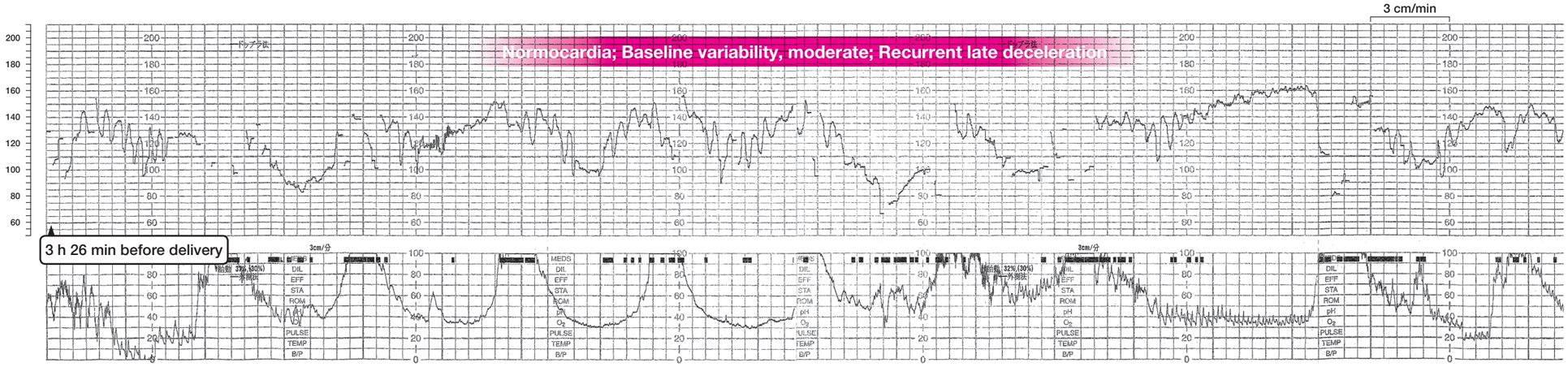


During hospitalization

3 h 34 min before delivery

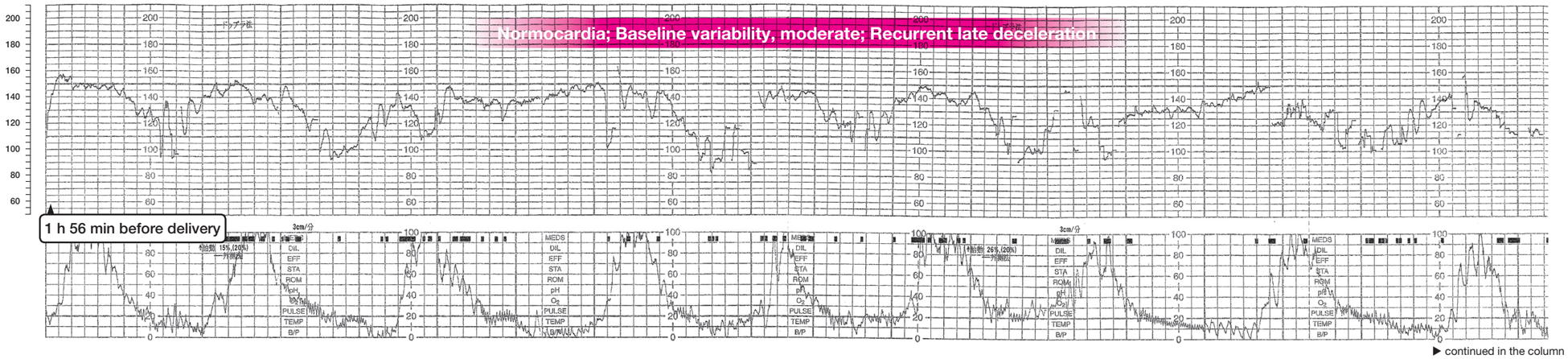
Artificial rupture of membranes was performed; Meconium staining
Cervical dilatation 7-8 cm
BP 150/87 mmHg
Pulse rate 76 bpm



During hospitalization

2 h 9 min before delivery

Cervical dilatation 9 cm



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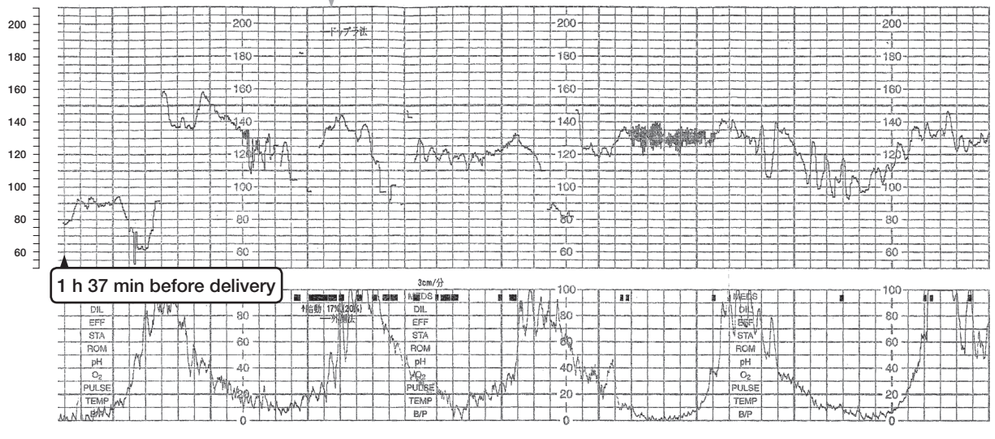
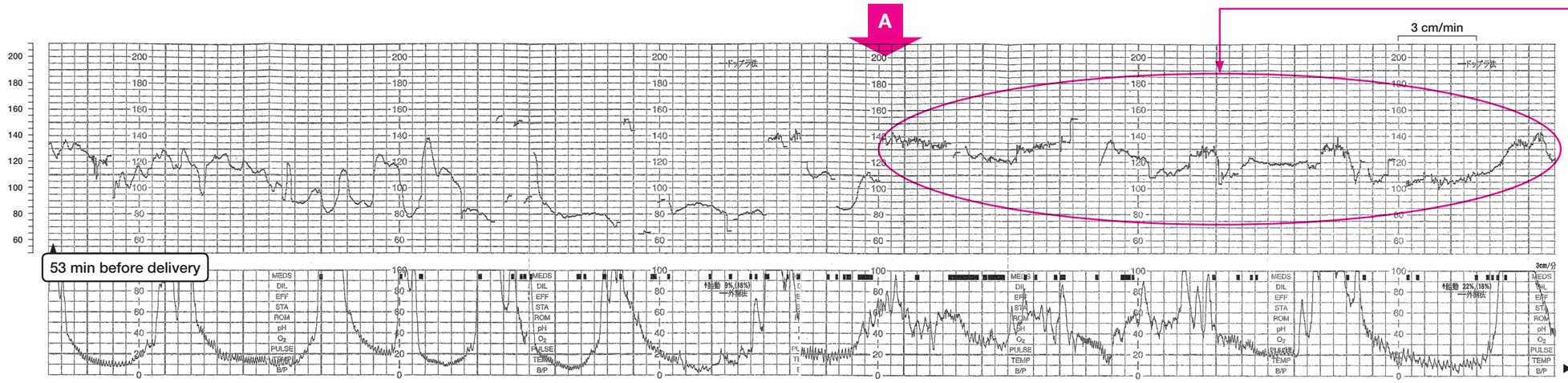
Full dilatation of cervix



1 h 17 min before delivery

BP 106/68 mmHg
Pulse rate 117 bpm

Before delivery



Cautions in interpretation

Retrospectively, fetal bradycardia (B) continued after Arrow A and the record was likely to be the maternal heart rate on the basis of the following points.

(1) The patterns were different between before and after Arrow A.
(2) Umbilical artery gas analysis showed a pH 6.7 level.
(3) The pattern of maternal heart rate during uterine contractions are reported to be similar to the acceleration patterns.

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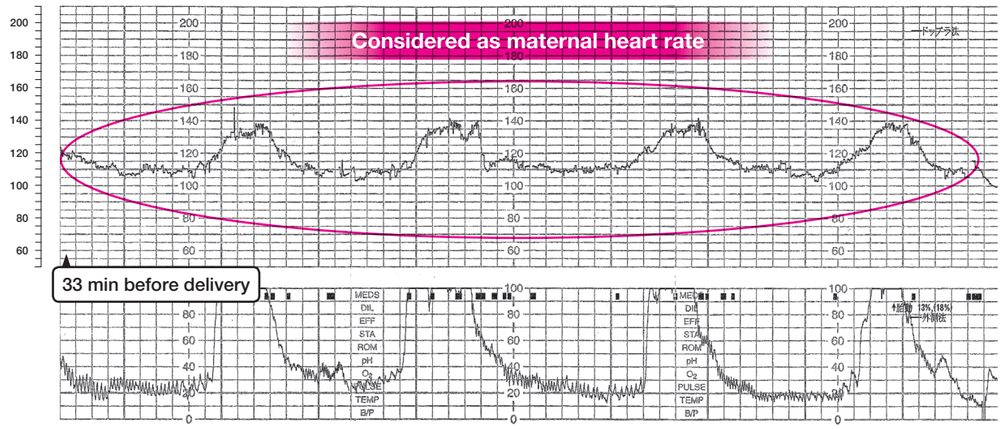

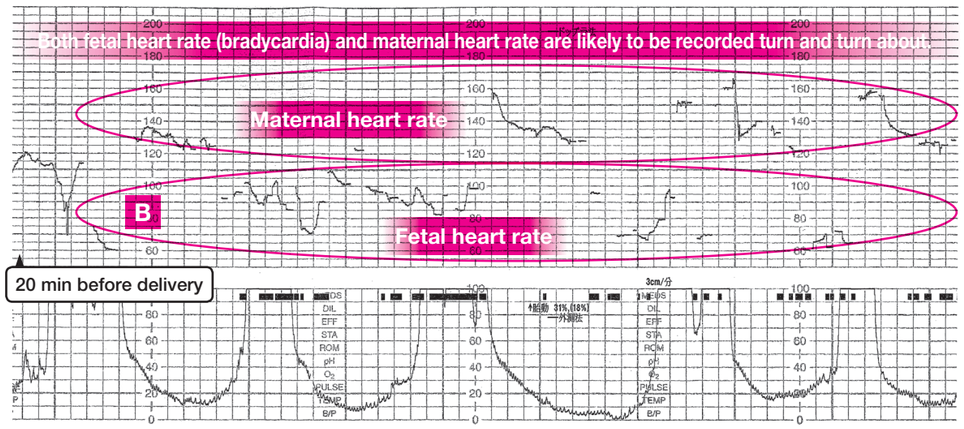

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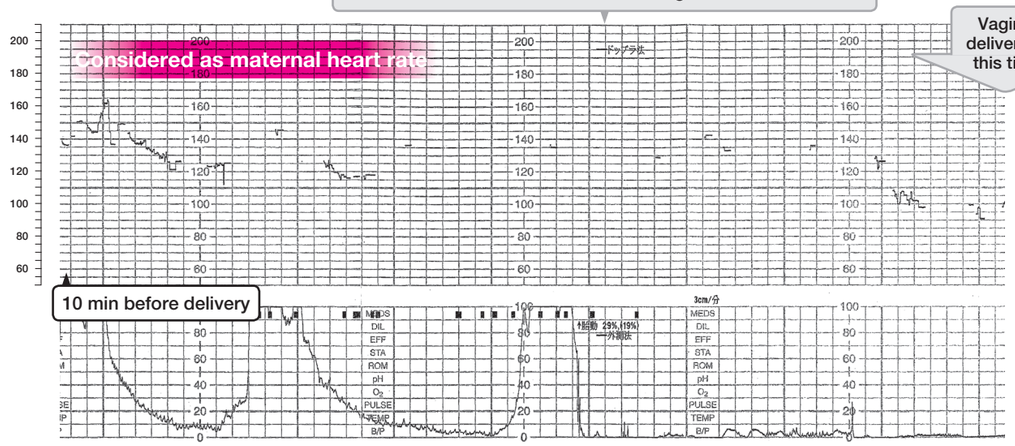
The cardiac arrest of the fetus was confirmed on ultrasonography. Vacuum extraction begun.

Vaginal delivery at this time



Findings associated with delivery

- Umbilical artery pH was 6.7 level.
- Newborn course:
  Apgar score; 0 at 1 min
  1 at 5 min
- Findings of the amniotic fluid, umbilical cord, and placenta:
  Entanglement of the umbilical cord (a single loop)
  Histopathological examination ▶ Chorioamnionitis; Funisitis

- Causes of the development of cerebral palsy in the cause analysis report
  Multiple factors (placental dysfunction, umbilical cord complications excluding cord prolapse)