

1. Case examples by the main cause of the cerebral palsy

Case 29 (Multiple factors- 3)

The Japan Obstetric Compensation System for Cerebral Palsy : Cardiotocograms of Cerebral Palsy Cases
Case examples by the main cause of the cerebral palsy

Summary
Delivery course

Gestational weeks 40 weeks' gestation

Risk factors Prior cesarean birth; GBS colonization

Birth weight 3000 g level

The woman was admitted to hospital because of rupture of membranes. ► Vacuum extraction was performed based on the diagnosis of non-reassuring fetal status.

At the outpatient prenatal care (38 weeks of gestation)



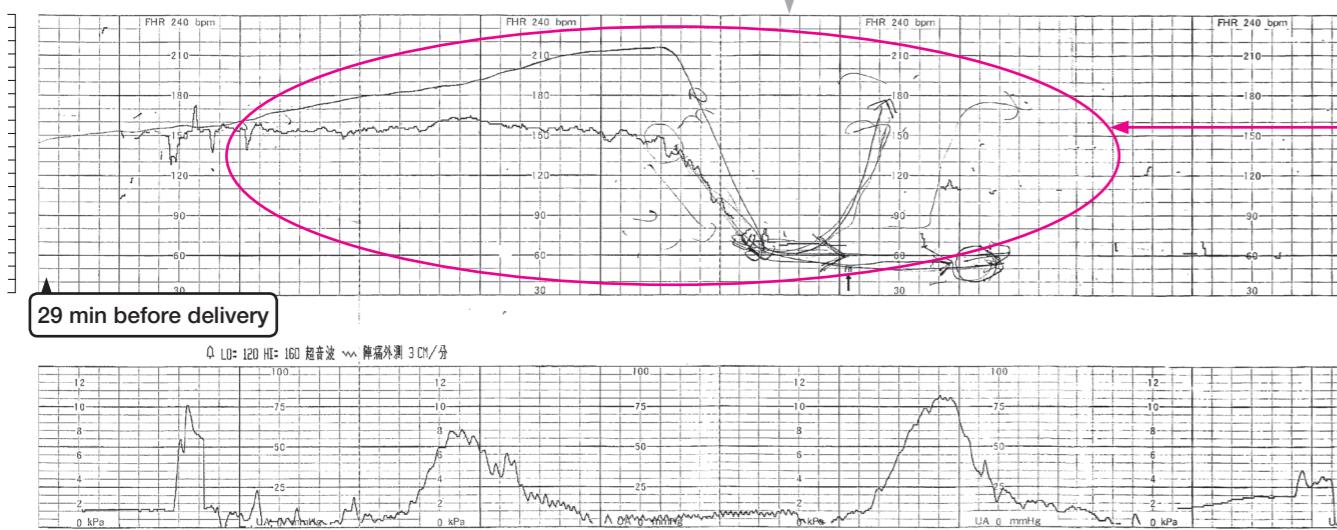
On admission

13 h 4 min before delivery
Watery vaginal discharge
12 h 23 min before delivery
Cervical dilatation 3 cm
Irregular uterine contractions



8 h 44 min before delivery
Cervical dilatation 3-4 cm
She felt an irregular abdominal distention.
Body temperature 37.2 °C
2 h 44 min before delivery
Onset of labor

Before delivery



18 min later, baby was delivered by vacuum extraction.

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 artery pH was 7.0 level
- Newborn course:
Apgar score: 1 at 1 min
3 at 5 min
- Findings of the amniotic fluid, umbilical cord, and placenta:
Calcium deposits
Histopathological examination ► Chorioamnionitis; Funisitis; A slightly enlarged placenta with yellow stains and calcification; Marginal insertion of the cord

Causes of the development of cerebral palsy in the cause analysis report
Multiple factors (Umbilical cord complications, excluding cord prolapse, chorioamnionitis)

Case 30 (Multiple factors- 4)

Summary

Gestational weeks 40 weeks' gestation

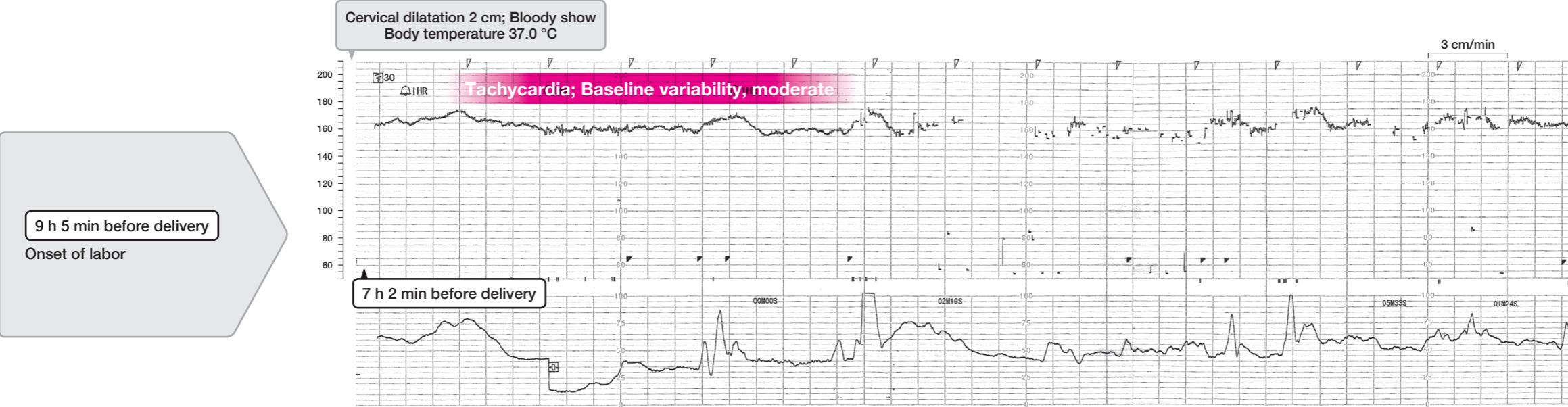
Risk factors None

Birth weight 3100 g level

Delivery course

The woman was admitted to hospital because of onset of labor. ► Vacuum extraction was performed based on the diagnosis of non-reassuring fetal status.

On admission



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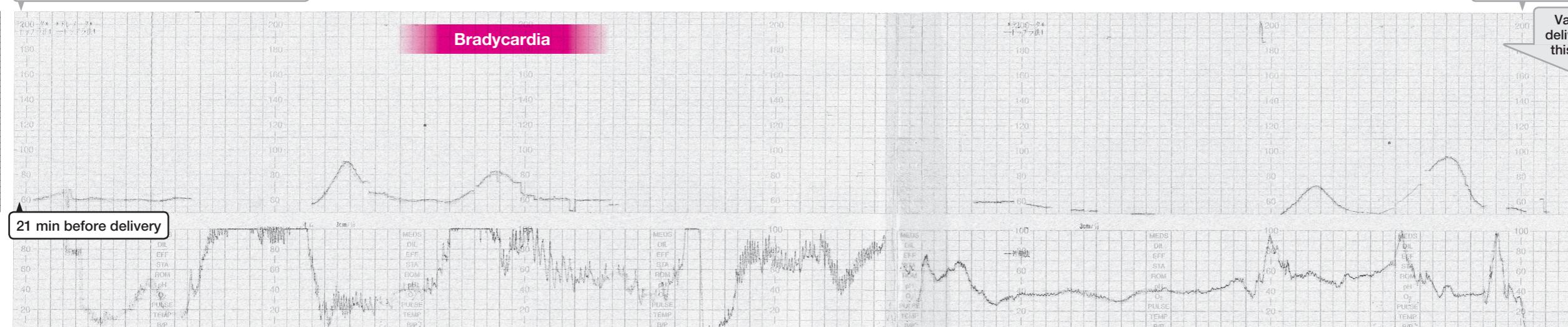
The FHR monitoring was interrupted.

4 h 5 min before delivery
Rupture of membranes; No meconium staining; Vaginal bleeding
Cervical dilatation 6 cm; interval of the uterine contractions 3-4 min
1 h 35 min before delivery
Cervical dilatation 8 cm
1 h 5 min before delivery
A relatively large amount of vaginal bleeding
45 min before delivery
The FHR was 130 bpm level on auscultation.
35 min before delivery
Full dilatation of cervix

Findings associated with delivery

- Umbilical venous pH was 7.1 level.
- Newborn course:
Apgar score; 1 at 1 min
3 at 5 min
- Findings of the amniotic fluid, umbilical cord, and placenta:
Meconium staining; bloody amniotic fluid;
Entanglement of the umbilical cord (a single loop); Clots
Histopathological examination ► Necrotic region (3 cm x 2.5 cm) in the center of the placenta; Findings suspicious of viral infection in the vascular endothelium of the infarct region.
- Causes of the development of cerebral palsy in the cause analysis report
Multiple factors (placental abruption, intrauterine infection)

Before delivery



Vacuum extraction
using Kristeller's maneuver (uterine fundal pressure)

Vaginal delivery at this time

Summary

Gestational weeks 41 weeks' gestation

Risk factors Fetal growth restriction

Birth weight 2700 g level

Delivery course

The woman was admitted to hospital because of labor pains. ► Drip infusion of oxytocin was used for induction of labor. ► Baby was delivered vaginally.

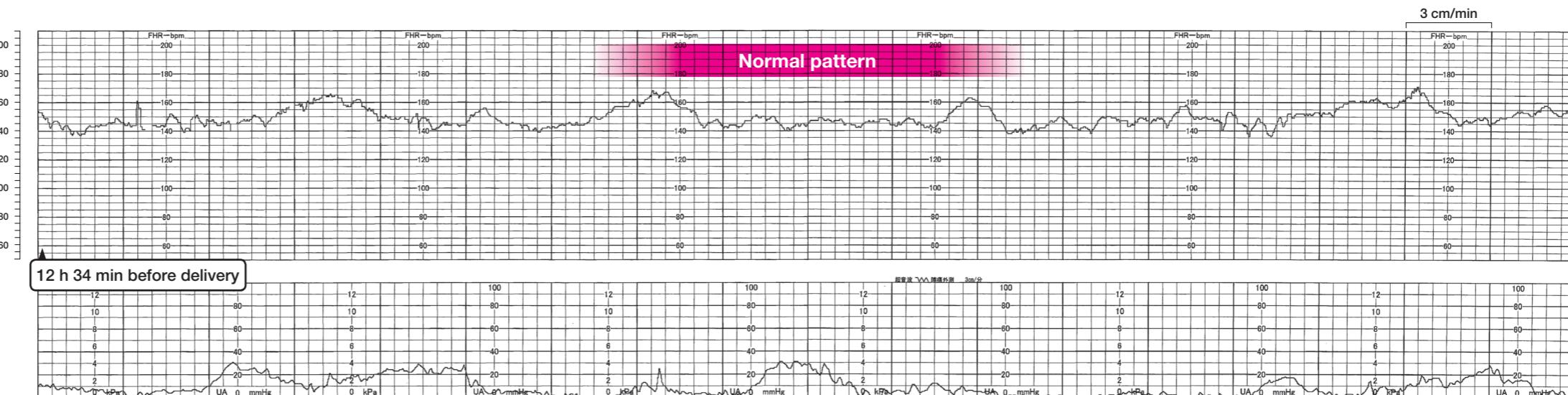
During hospitalization

42 h 12 min before delivery

She was admitted to hospital because of labor pains.

Approximately 13 h before delivery

Oxytocin drip infusion begun.



During hospitalization

12 h 12 min before delivery

Onset of labor

10 h 42 min before delivery

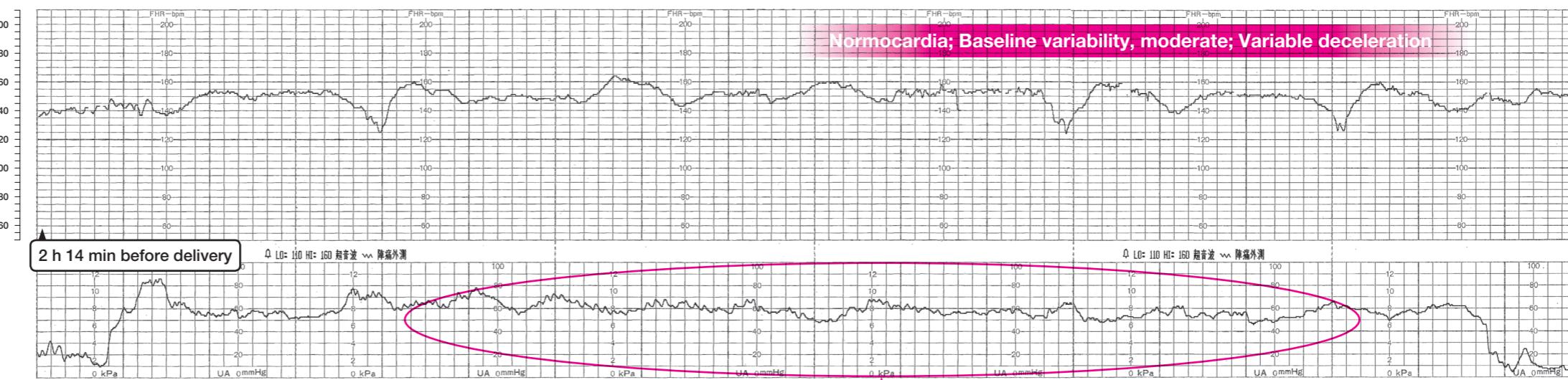
Cervical dilatation 6 cm
Body temperature 37.5 °C

5 h 42 min before delivery

Cervical dilatation 9 cm

3 h 52 min before delivery

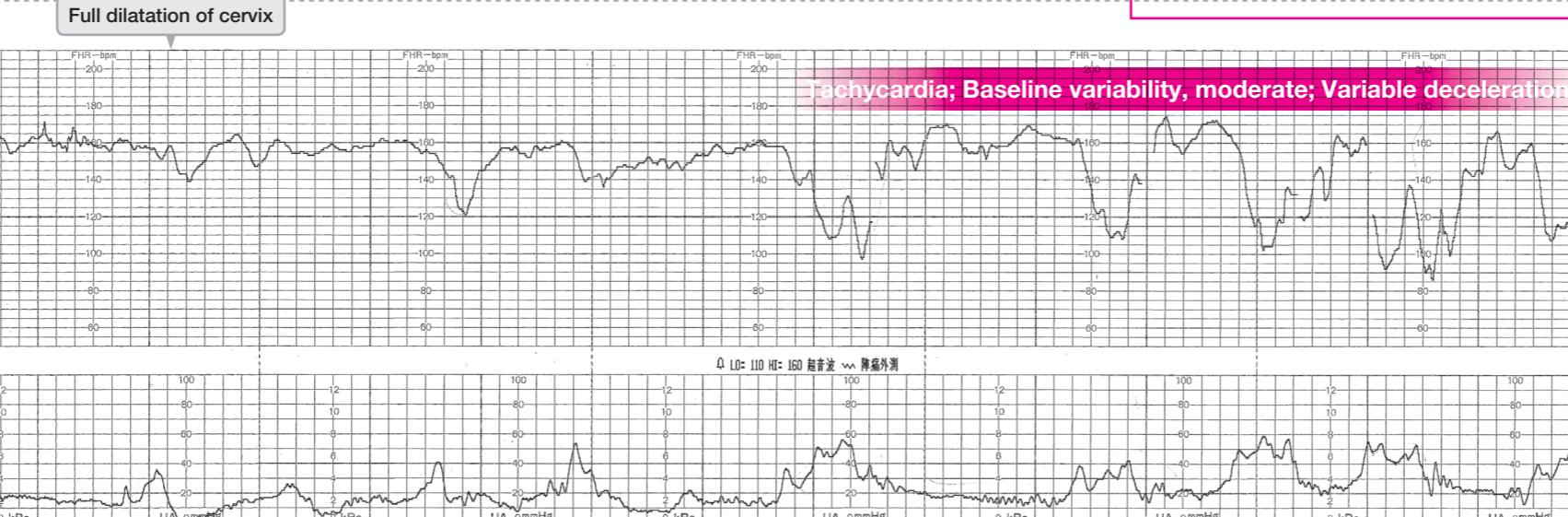
Rupture of membranes; No meconium staining



Before delivery

Full dilatation of cervix

1 h 2 min before delivery

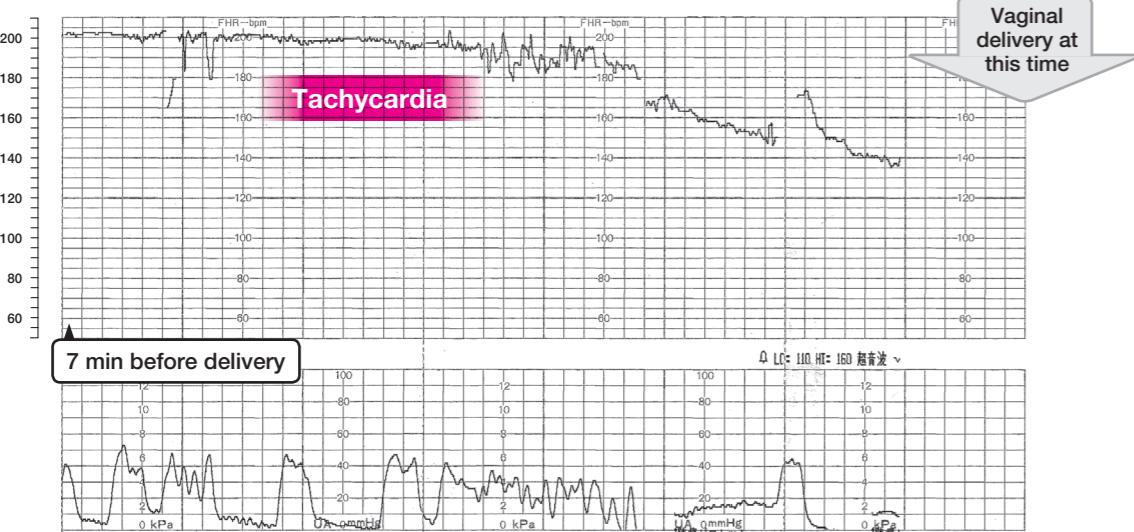
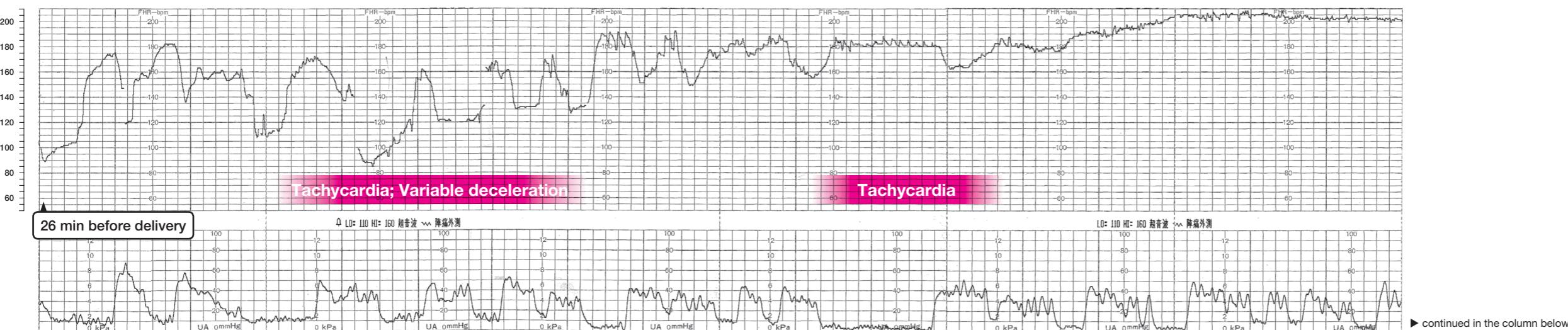
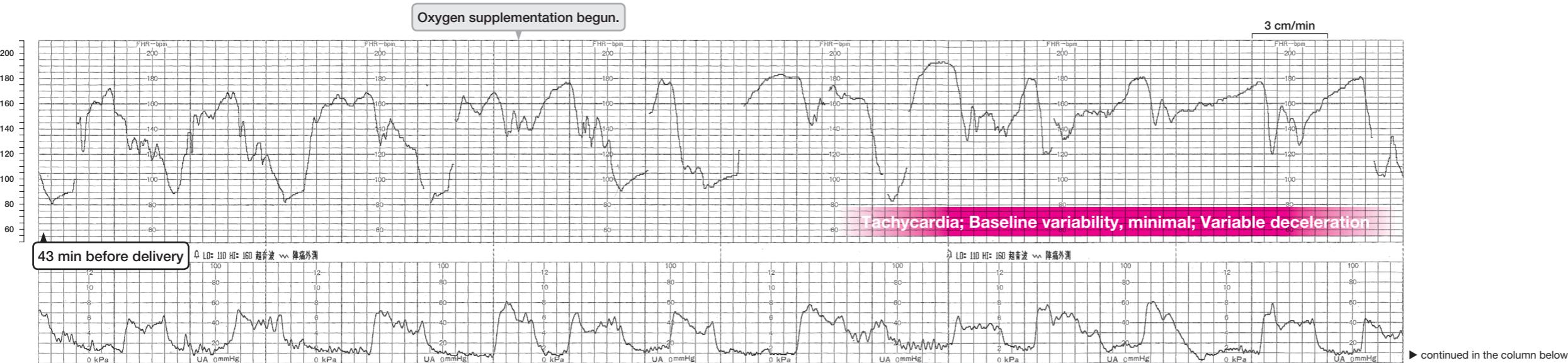


Cautions in interpretation

Uterine contraction patterns are important to interpret late deceleration patterns.

Tocodynamometers should be placed at the appropriate site to reflect uterine contractions accurately

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Findings associated with delivery

- Umbilical artery pH was 7.1 level
- Newborn course:
Apgar score; 6 at 1 min
6 at 5 min
- Findings of the amniotic fluid, umbilical cord, and placenta:
Meconium staining
Histopathological examination ► Chorioamnionitis; Funisitis

- Causes of the development of cerebral palsy in the cause analysis report
Multiple factors (intrauterine infection and others)

Case 32 (Multiple factors- 6)

Summary

Gestational weeks 39 weeks' gestation

Risk factors

Threatened preterm delivery

Birth weight

3400 g level

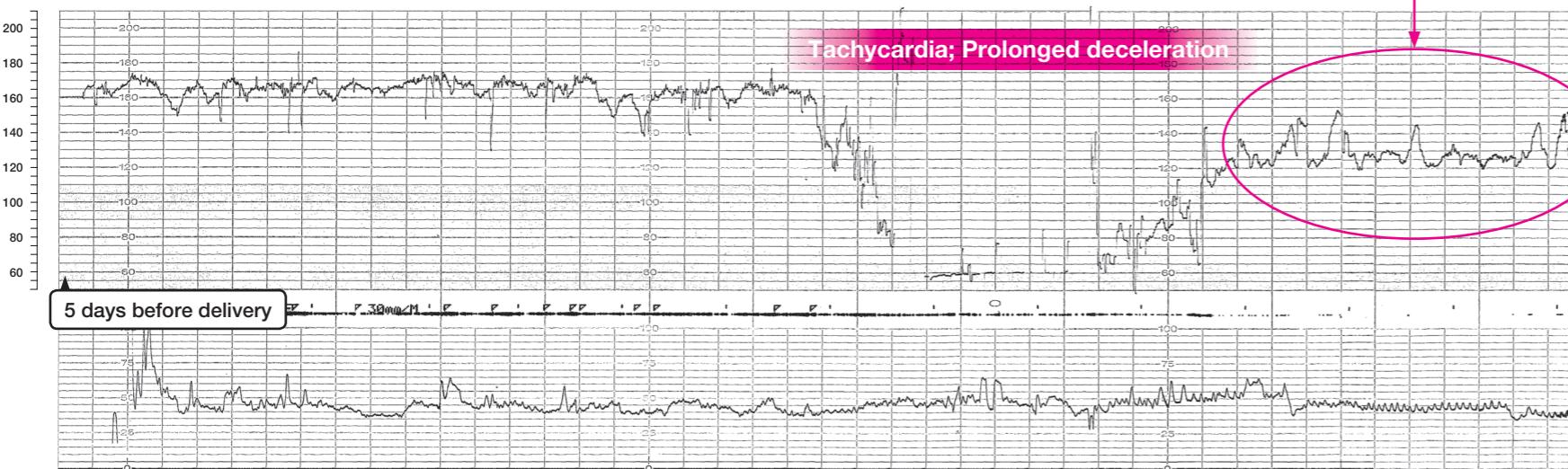
Delivery course

The woman was admitted to hospital because of labor pains and decreased fetal movements. ► Cesarean section was performed based on the diagnosis of non-reassuring fetal status.

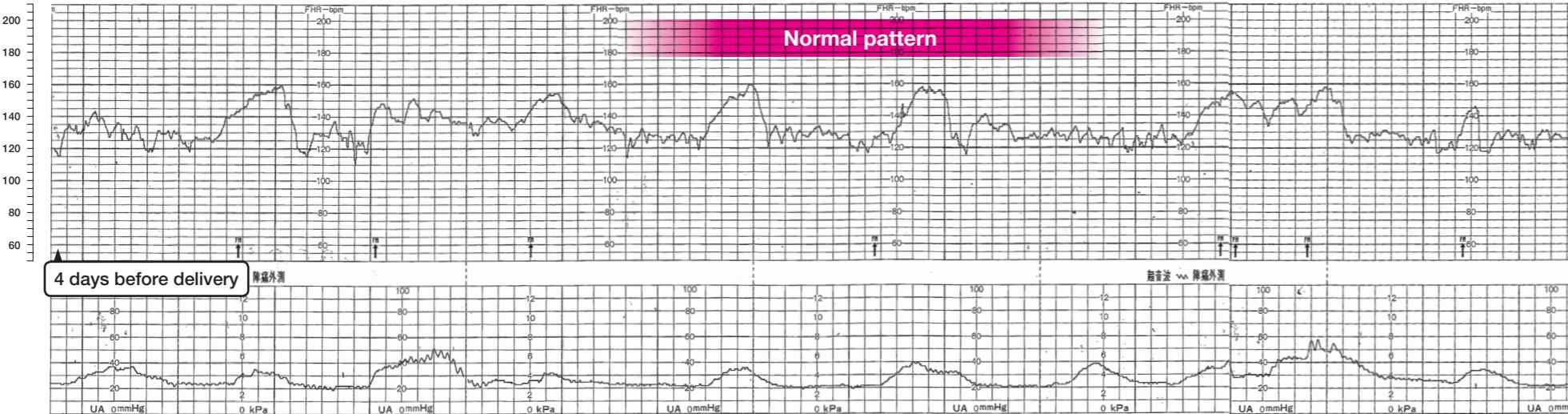
At the outpatient prenatal care (36 weeks of gestation)



At the outpatient prenatal care (39 weeks of gestation)



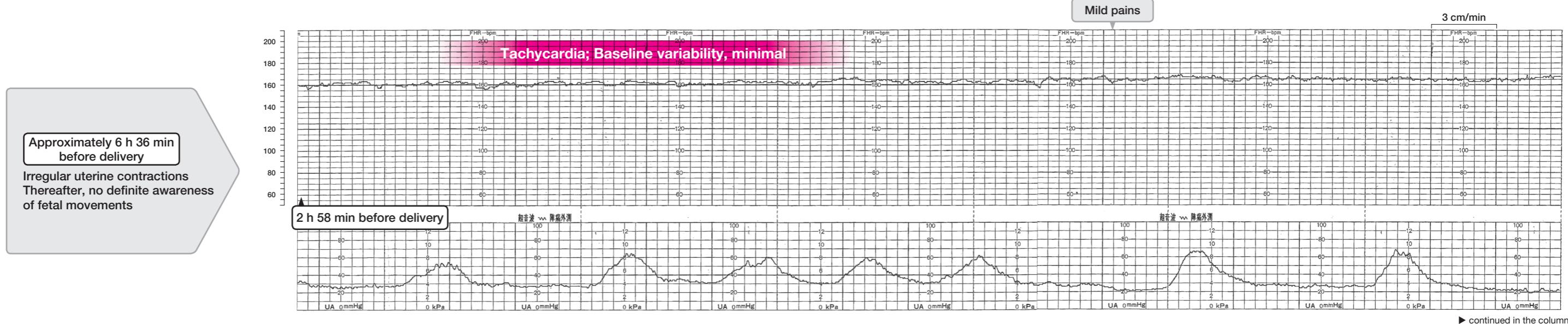
During hospitalization for the management of "latent fetal distress"



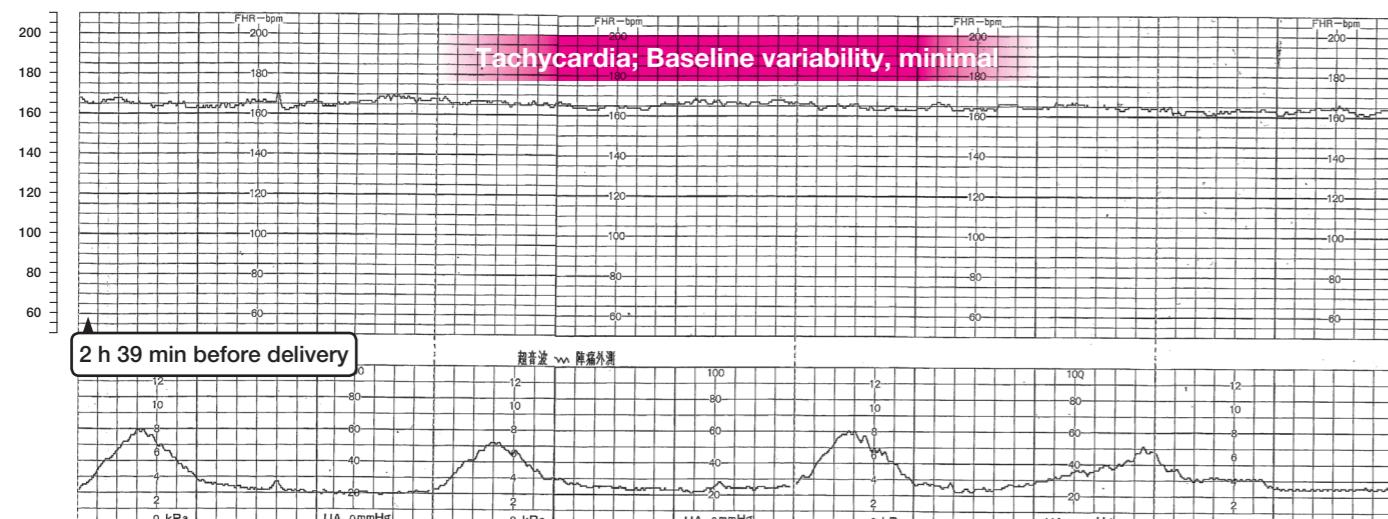
She was admitted to hospital for the management of "latent fetal distress."
Cervical dilatation 4 cm

CTG monitor was placed 5 times after admission and all the tracings showed reassuring patterns. Thus, she was discharged from the hospital.

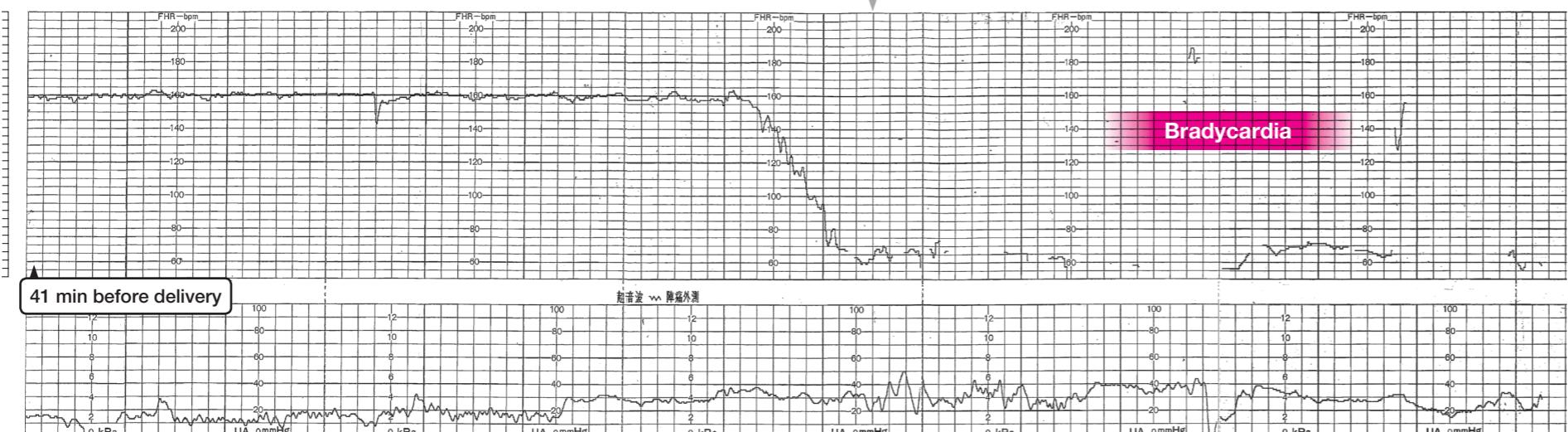
On admission (4 days after the discharge
from the hospital for management)



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Before delivery



Findings associated with delivery

- Umbilical cord blood gas analysis: No information
- Newborn course:
Apgar score: 0 at 1 min
0 at 5 min
- Findings of the amniotic fluid, umbilical cord, and placenta:
The umbilical cord went down to the level near the ear or the temple of the neonate and the umbilical vessels seemed collapsed due to physical compression.
Histopathological examination ► A few calcifications; Mild fibrin deposition between the layers of the chorion
- Causes of the development of cerebral palsy in the cause analysis report
Multiple factors (Umbilical cord complications, excluding cord prolapse, and others)

Summary

Gestational weeks 36 weeks' gestation

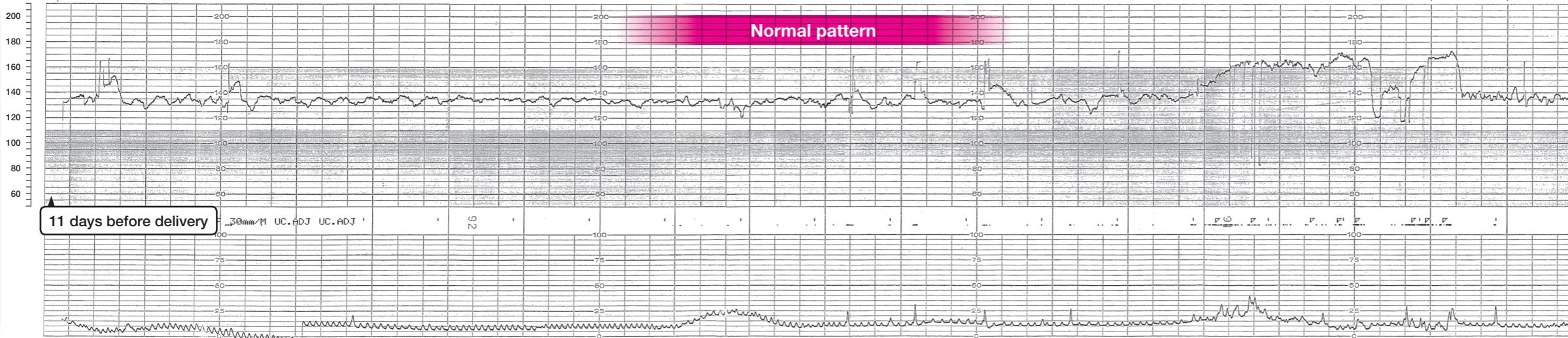
Risk factors Prior cesarean birth

Birth weight 2800 g level

Delivery course

The woman visited the hospital as she became aware of decreased fetal movements. ► She visited the hospital for re-examinations 2 days later. ► Cesarean section was performed based on the diagnosis of non-reassuring fetal status.

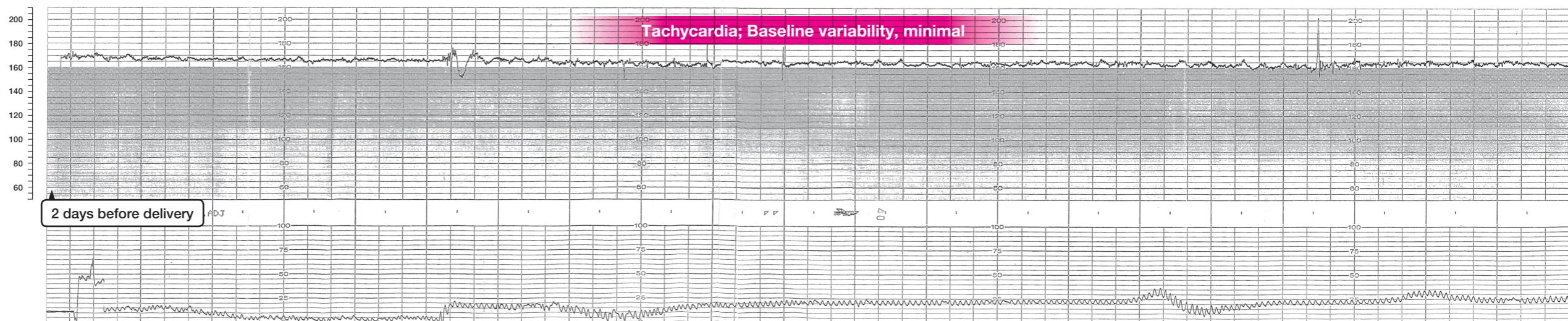
She noted fetal movements.



4 days before delivery
At the outpatient prenatal care
No abnormal findings

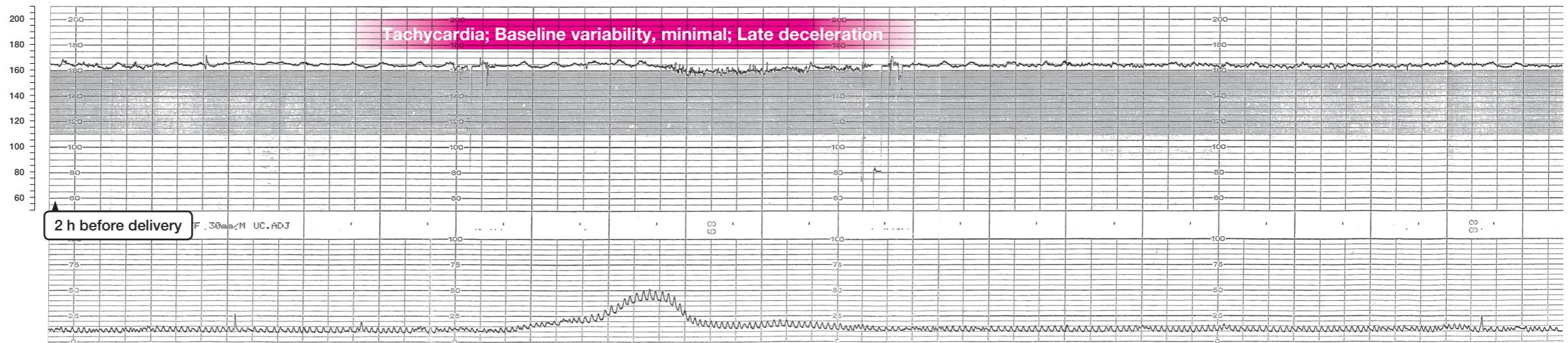
At the outpatient prenatal care (35 weeks of gestation)

2 days before delivery
She visited the hospital as she became aware of decreased fetal movements. Fetal movements were detected on ultrasonography. Amniotic fluid pocket was about 3 cm

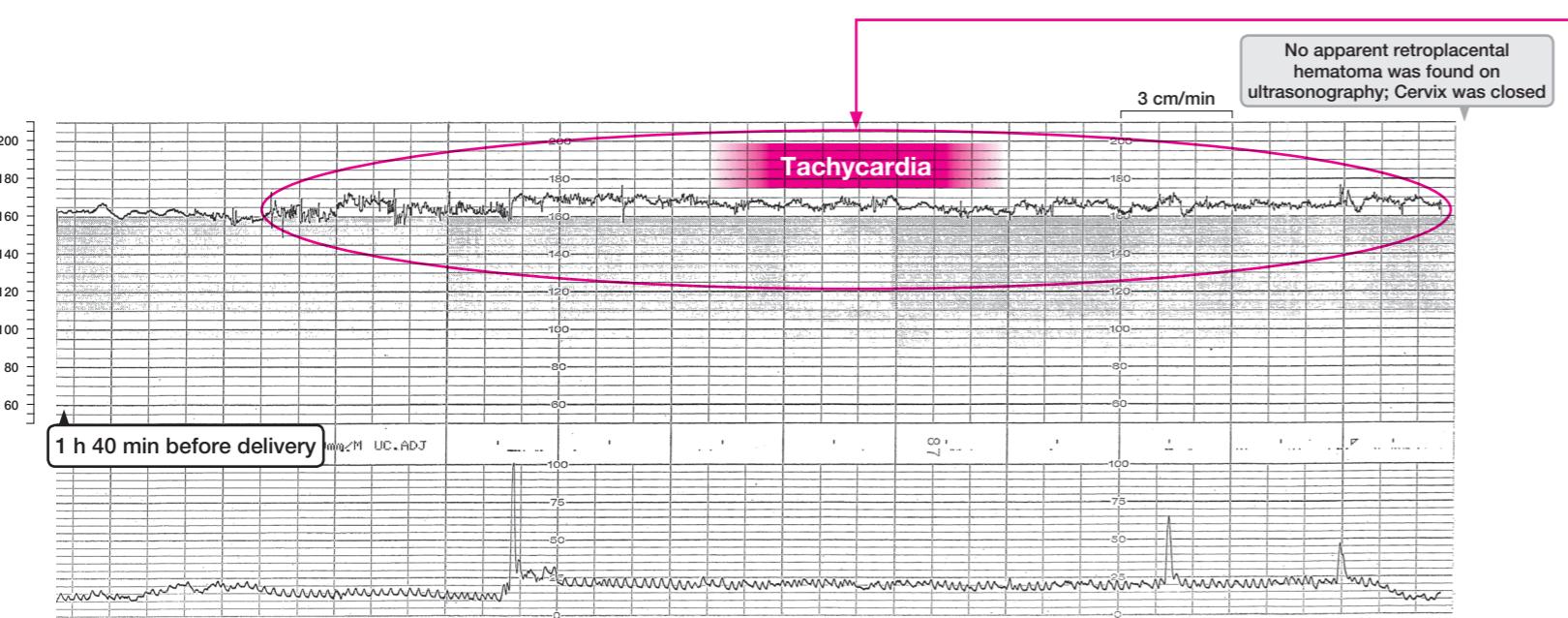


At the outpatient prenatal care (36 weeks of gestation)

She visited the hospital for a reevaluation of non-stress test (NST).



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Cautions in interpretation

Although the baseline variability seemed increased as compared to the former segment, those were noises (jitter) that occurred because of the shift of the Doppler probe. The Doppler probe should be placed at the appropriate site.

1 h 28 min later, baby was delivered by cesarean section.

Findings associated with delivery

- Umbilical artery pH was 7.4 level
- Newborn course:
Apgar score; 1 at 1 min
6 at 5 min
- 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
Unknown or unspecified causes

1. Case examples by the main cause of the cerebral palsy

Case 34 (Unknown or unspecified causes- 2)

The Japan Obstetric Compensation System for Cerebral Palsy : Cardiotocograms of Cerebral Palsy Cases
Case examples by the main cause of the cerebral palsy

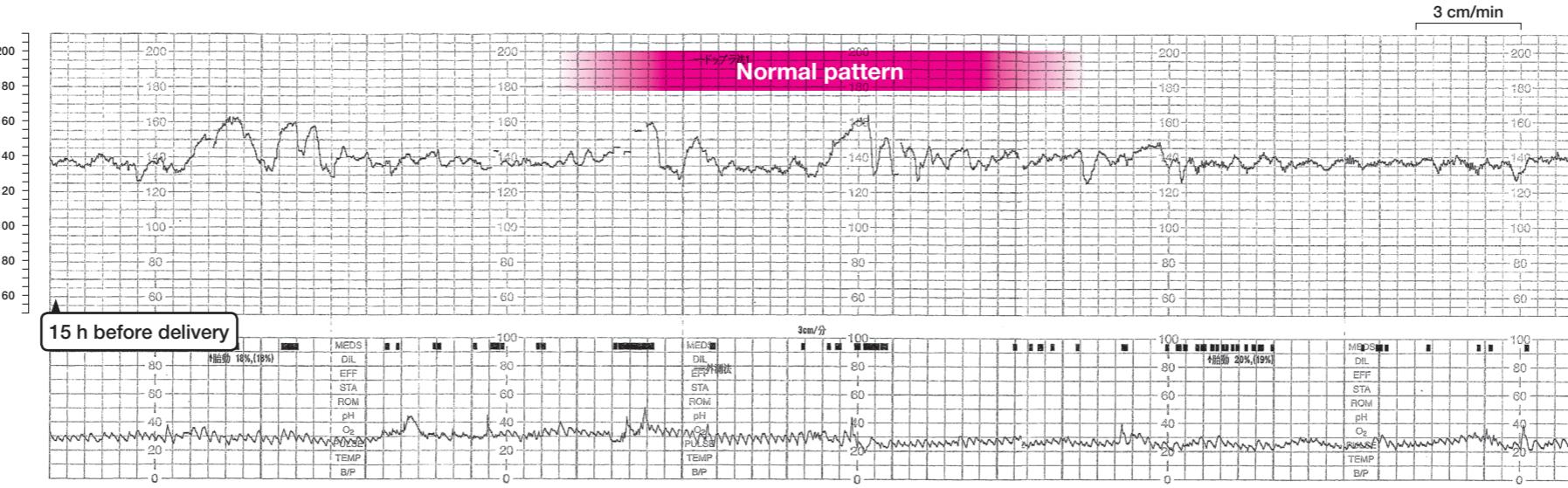
Summary

Gestational weeks 41 weeks' gestation
Risk factors None
Birth weight 3400 g level

Delivery course Woman admitted to hospital because of rupture of membranes. ► Dinoproston tablets were used for induction of labor. ► Oxytocin drip infusion was used for augmentation of labor. ► Vacuum extraction was tried because of the diagnosis of non-reassuring fetal status. ► Cesarean section was performed.

During hospitalization

Approximately 39 h 34 min before delivery
Watery vaginal discharge
18 h 19 min before delivery
The woman was admitted to hospital.
Cervical dilatation 3 cm
Meconium staining



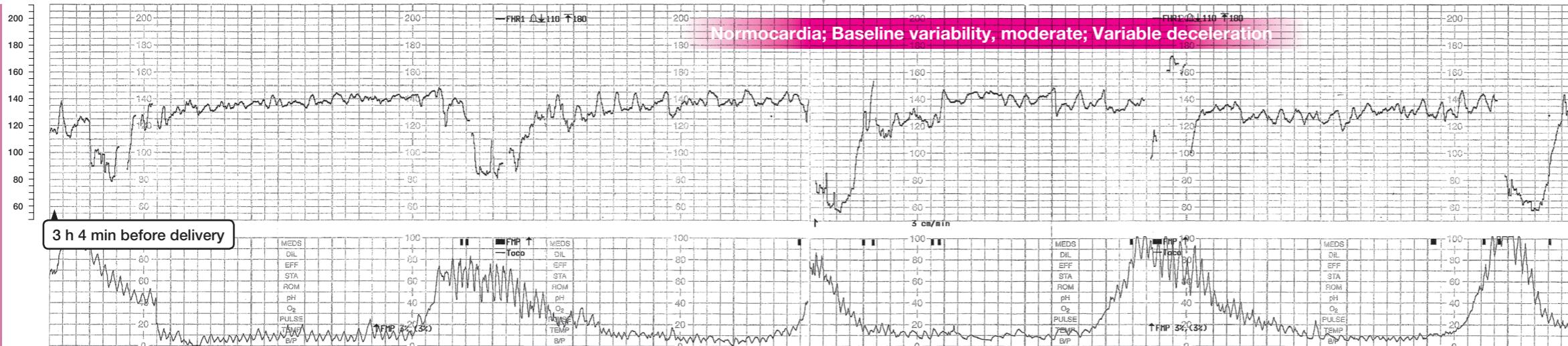
14 h 34 min before delivery
One dinoproston tablet was administered orally.
Cervical dilatation 0.5 cm
Five dinoproston tablets were administered orally thereafter.

8 h 4 min before delivery
Onset of labor. A pale pink show was noted.

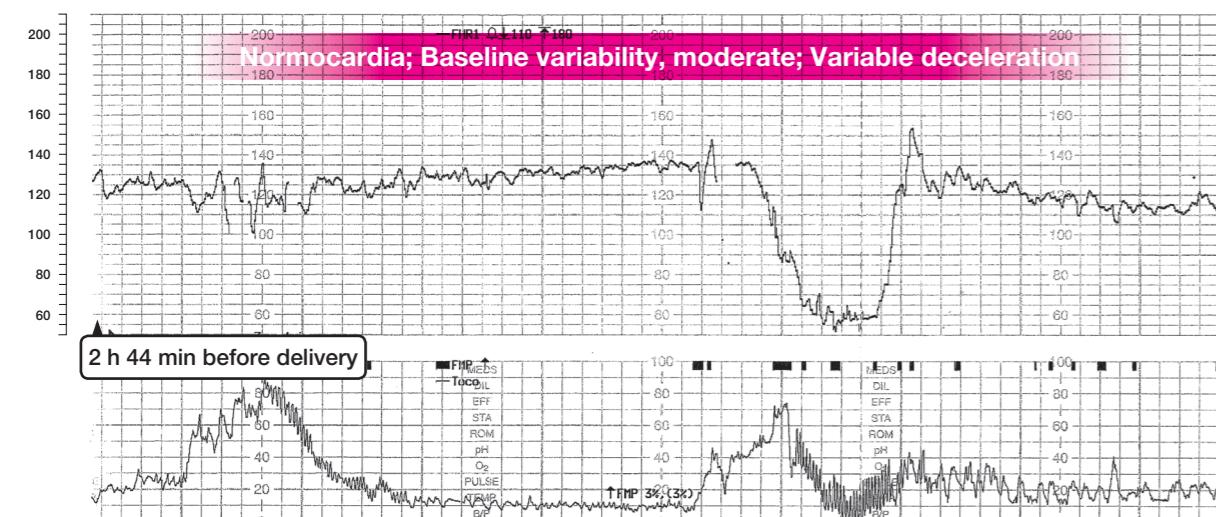
4 h 4 min before delivery
Cervical dilatation 8 cm

3 h 49 min before delivery
Oxygen supplementation begun.

During hospitalization



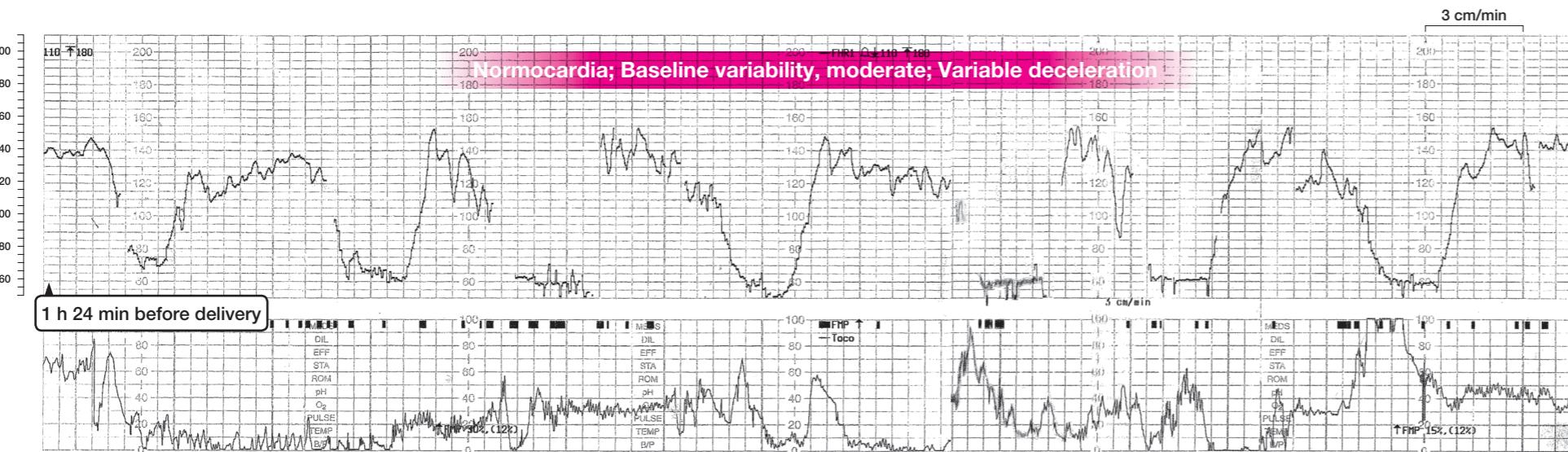
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2 h 19 min before delivery
Oxygen supplementation begun again.

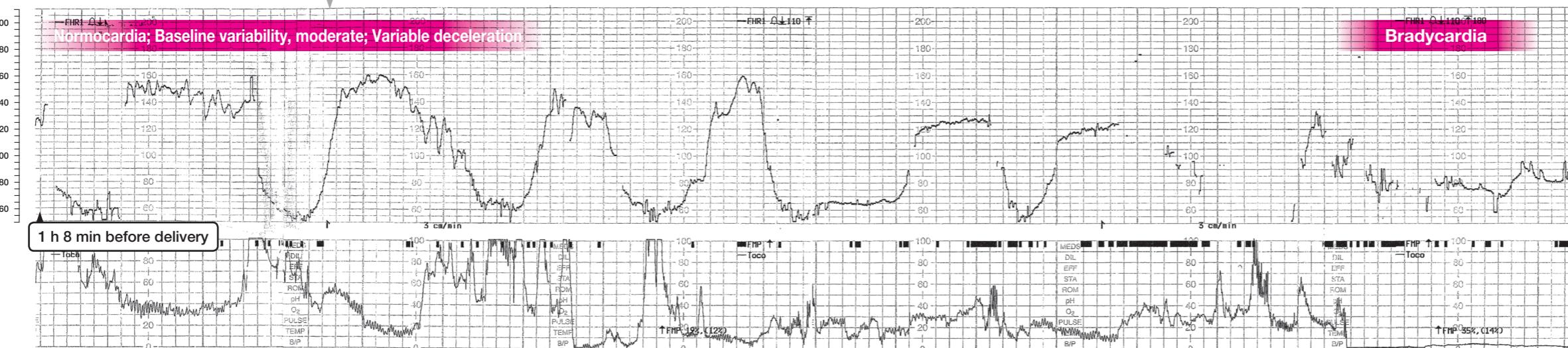
2 h 9 min before delivery
Oxytocin drip infusion begun because of the diagnosis of secondary weak pains.

Before delivery

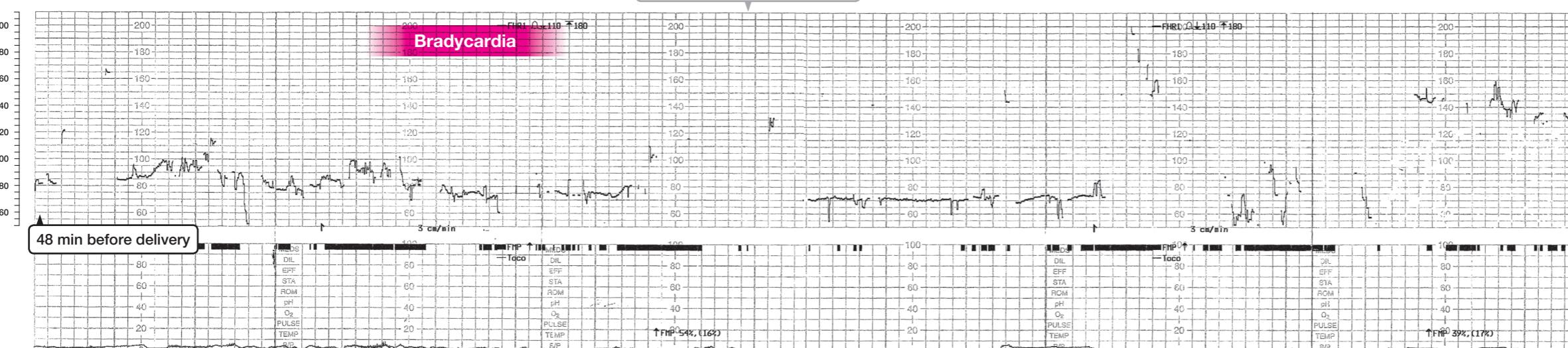


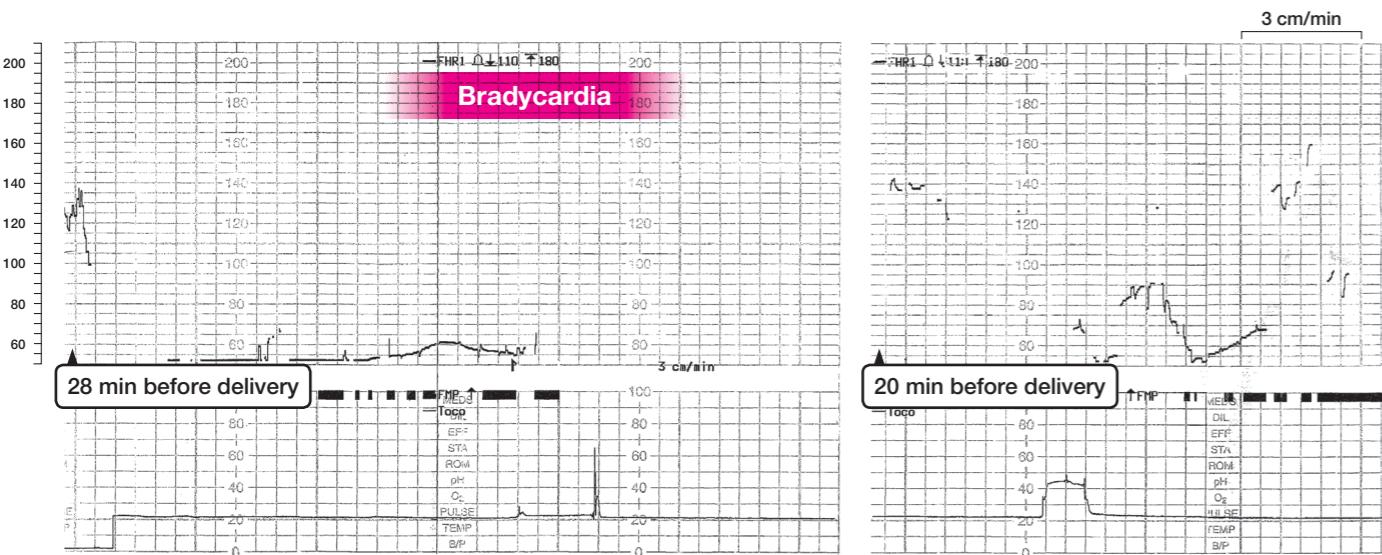
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Full dilatation of cervix
Vacuum extraction begun.



Oxytocin drip infusion stopped.
Vacuum extraction stopped.





16 min later, baby
was delivered by
cesarean section.

Findings associated with delivery

- Umbilical cord blood gas analysis (arterial or venous blood, unspecified): pH 6.7 level
- Newborn course:
Apgar score; 1 at 1 min
1 at 5 min
- Operative findings:
Malrotation (occiput posterior position of the vertex)
- Findings of the amniotic fluid, umbilical cord, and placenta:
Meconium staining
Histopathological examination ► No information

- Causes of the development of cerebral palsy in the cause analysis report
Unknown or unspecified causes

1. Case examples by the main cause of the cerebral palsy

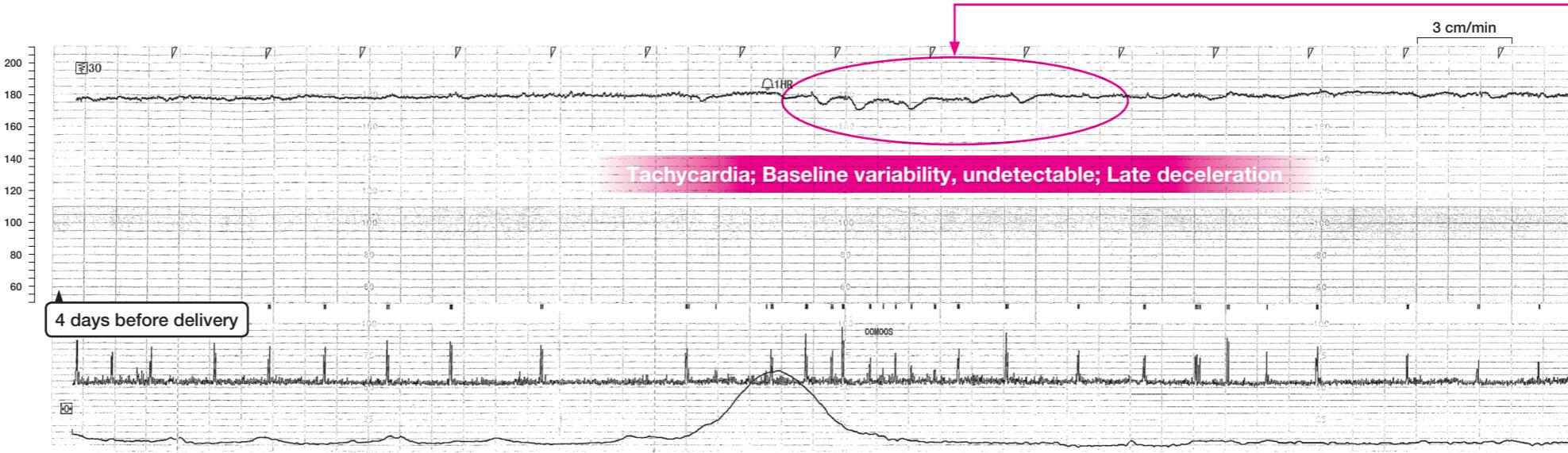
Case 35 (Unknown or unspecified causes- 3)

The Japan Obstetric Compensation System for Cerebral Palsy : Cardiotocograms of Cerebral Palsy Cases
Case examples by the main cause of the cerebral palsy

At the outpatient prenatal care

4 days before delivery

She noted hiccups-like movements of the fetus (movements akin to generalized seizures).



Cautions in interpretation

Note that this pattern is not a baseline variability, but a variability during the late decelerations.

At presentation to the transport source birthing facility

9 h 6 min before delivery

Normocardia; Baseline variability, undetectable

She was referred to the birthing facility because of a diagnosis of non-reassuring fetal status.

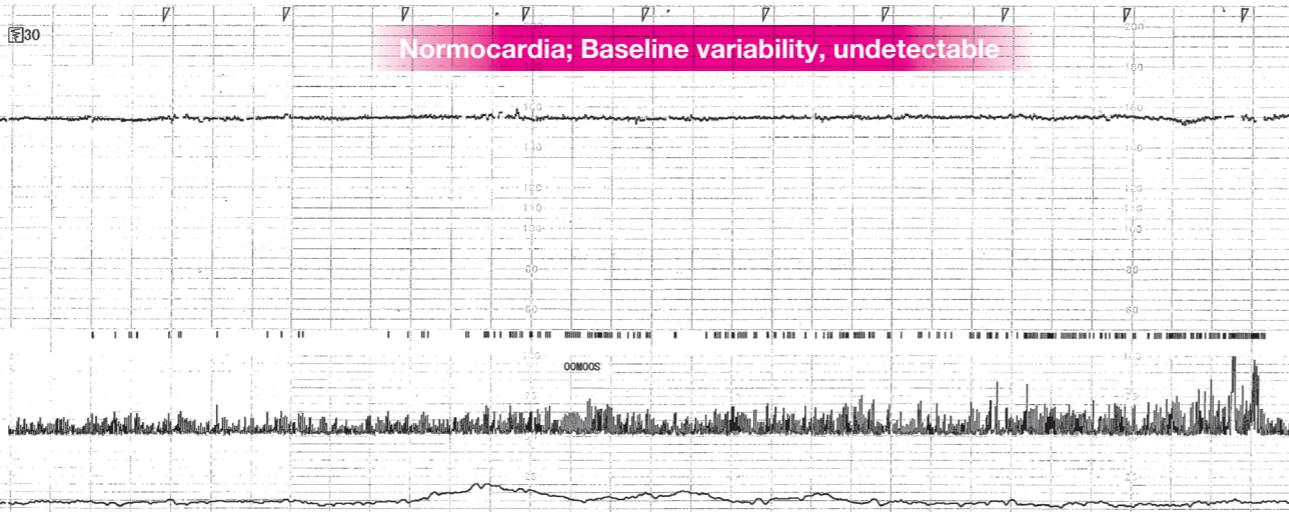
Approximately 7 h 33 min before delivery

At presentation to the birthing facility

5 h before delivery

No abnormalities were found in the umbilical arterial blood flow on ultrasonography. Biophysical profile scoring (BPS) was 4 points; Amniotic fluid index (AFI) 22-23 cm

4 h 23 min before delivery
Body temperature 36.9 °C



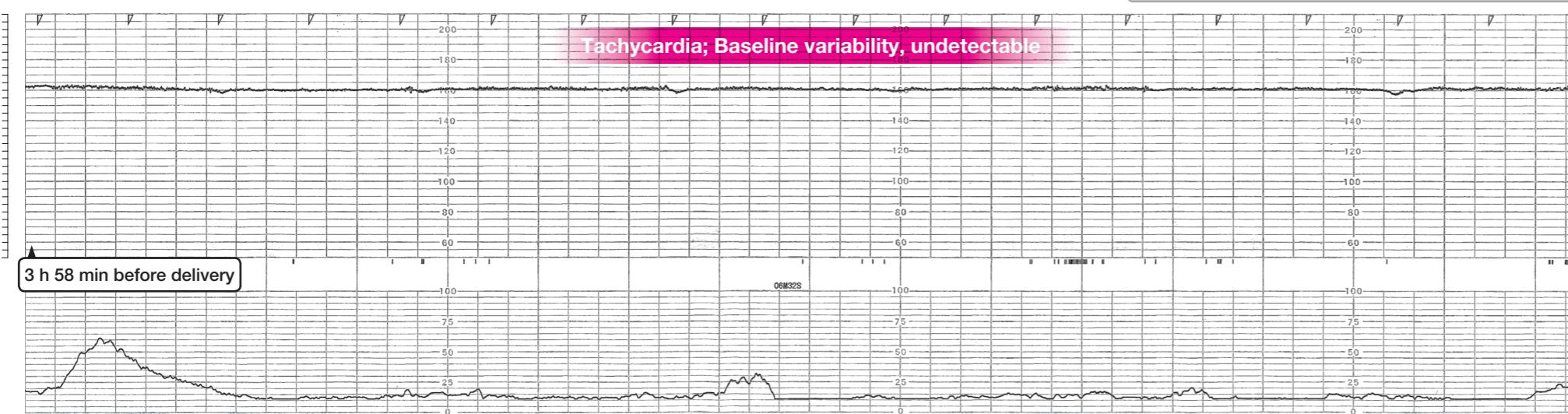
Ultrasonography was performed 2 times before cesarean section. The result of biophysical profile scoring (BPS) was 4.

During hospitalization at the birthing facility, before delivery

3 h 58 min before delivery

Tachycardia; Baseline variability, undetectable

3 h 42 min later, baby was delivered by cesarean section.



Findings associated with delivery

- Umbilical artery pH was 6.9.
- Newborn course: Apgar score; 1 at 1 min 1 at 5 min
- Findings of the amniotic fluid, umbilical cord, and placenta: Meconium staining; White infarcts Histopathological examination ► Chorioamnionitis

- Causes of the development of cerebral palsy in the cause analysis report
Unknown or unspecified causes

Summary

Gestational weeks 40 weeks' gestation

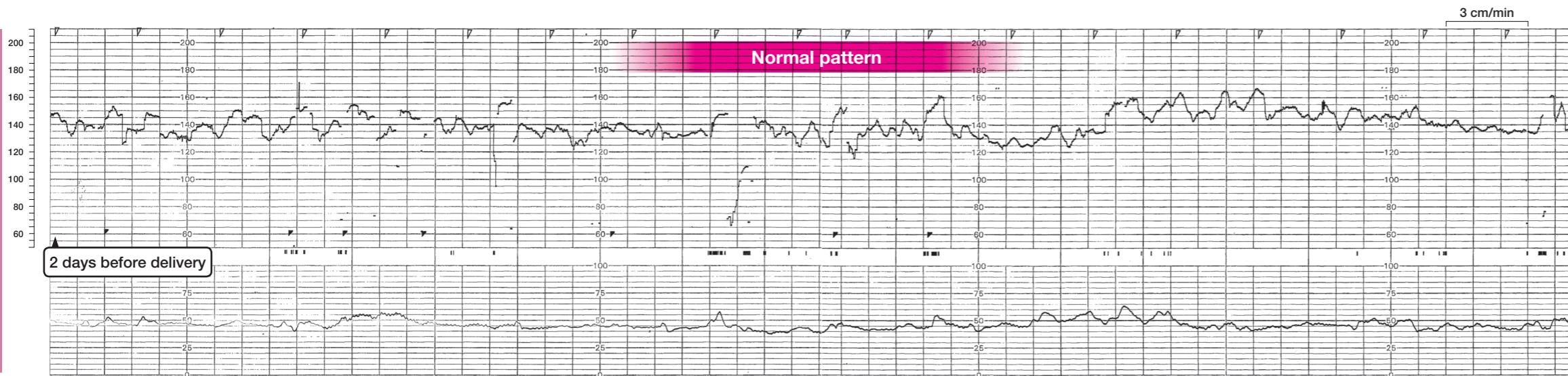
Risk factors None

Birth weight 3800 g level

Delivery course

The woman was admitted to hospital for induction of labor. ► Oxytocin drip infusion was used for induction of labor. ► Vacuum extraction was tried based on the diagnosis of non-reassuring fetal status. ► Cesarean section was performed.

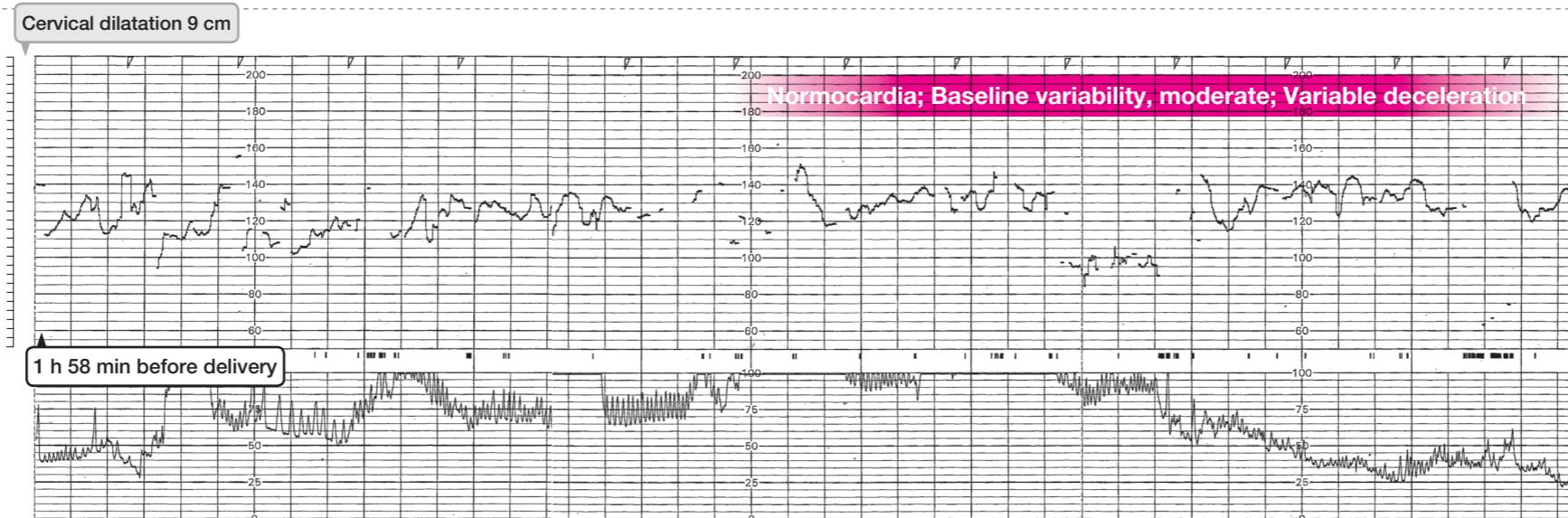
On admission



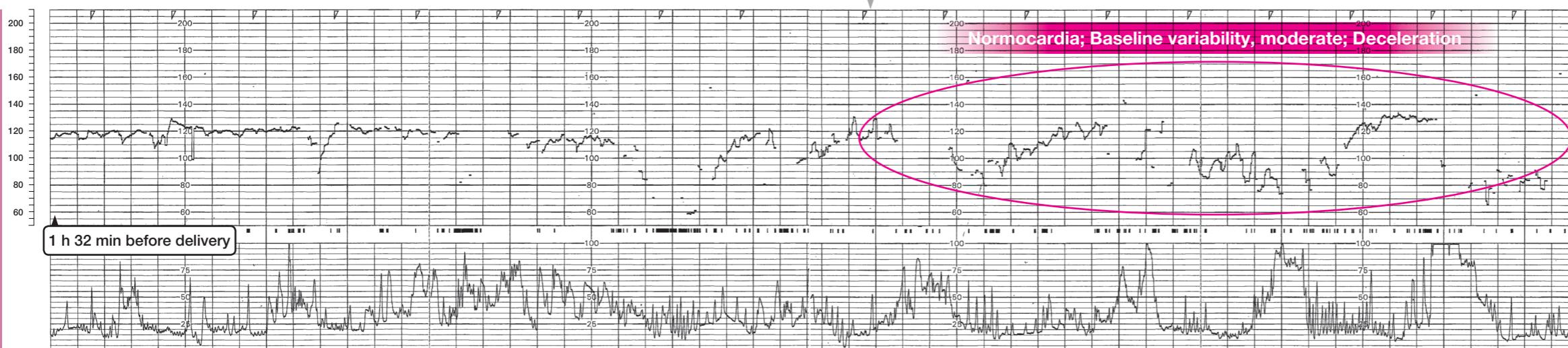
2 days before delivery
Ten laminarias were inserted. One dose of sodium prasterone sulfate hydrate was administered.

During hospitalization

18 h 42 min before delivery
Cervical dilatation 3 cm
15 h 17 min before delivery
Induction of labor was initiated with oxytocin drip infusion.
14 h 42 min before delivery
Sodium prasterone sulfate hydrate was administered. (thereafter, the same drug was administered twice.)
6 h 12 min before delivery
Scopolamine butylbromide was administered. (thereafter, the same drug was administered twice.)

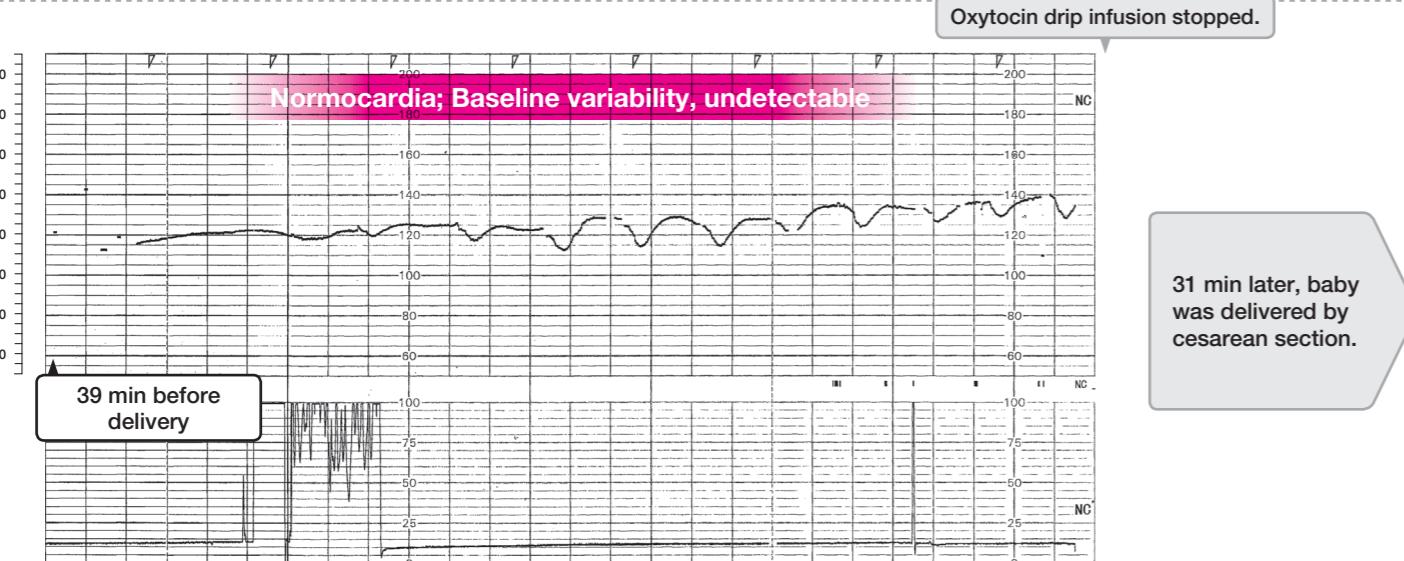
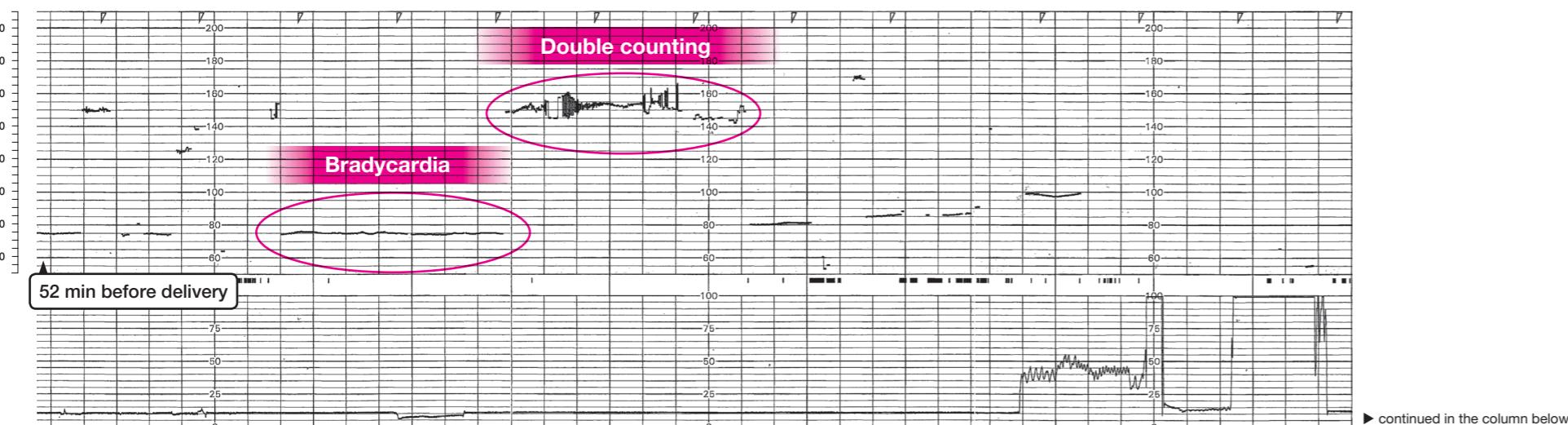
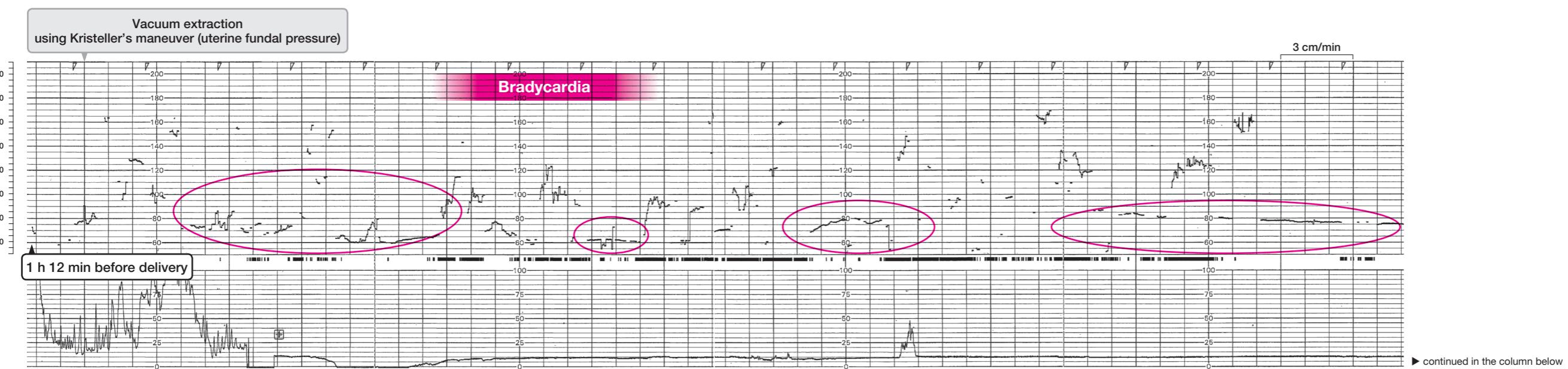


Before delivery



Cautions in interpretation
Although decelerations continued to recur, the interpretation was difficult due to many noises. The Doppler probe should be placed at the appropriate site.

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Findings associated with delivery

- Umbilical cord blood gas analysis: No information
- Newborn course:
Apgar score; 3 at 1 min
4 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
Unknown or unspecified causes

Summary

Gestational weeks 33 weeks' gestation

Risk factors Threatened abortion

Birth weight 2200 g level

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

On admission

Approximately 11 h 46 min before delivery

Back pain and low back pain

4 h 46 min before delivery

Rupture of membranes.

3 h 46 min before delivery

Onset of labor

2 h 16 min before delivery

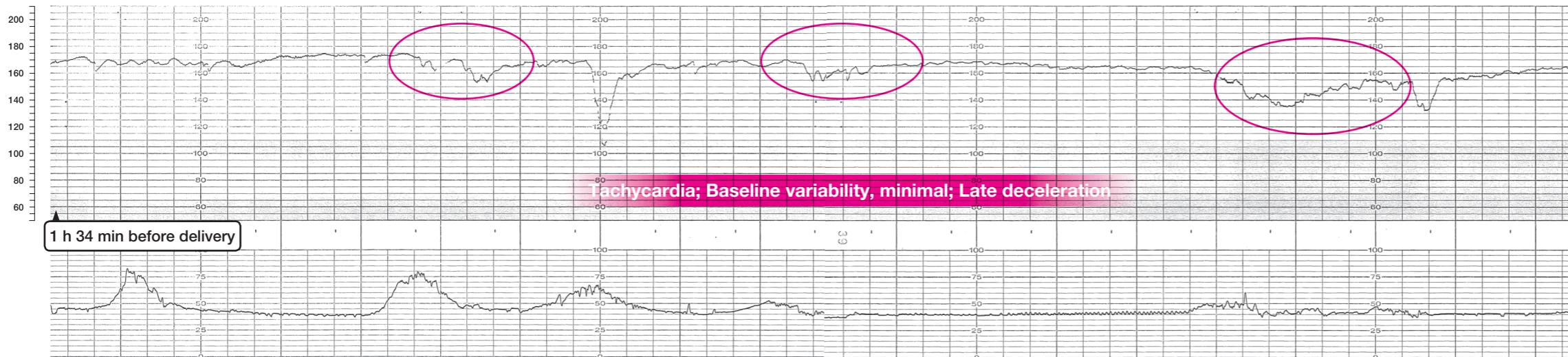
The woman was admitted to hospital.

Cervical dilatation 1-2 cm

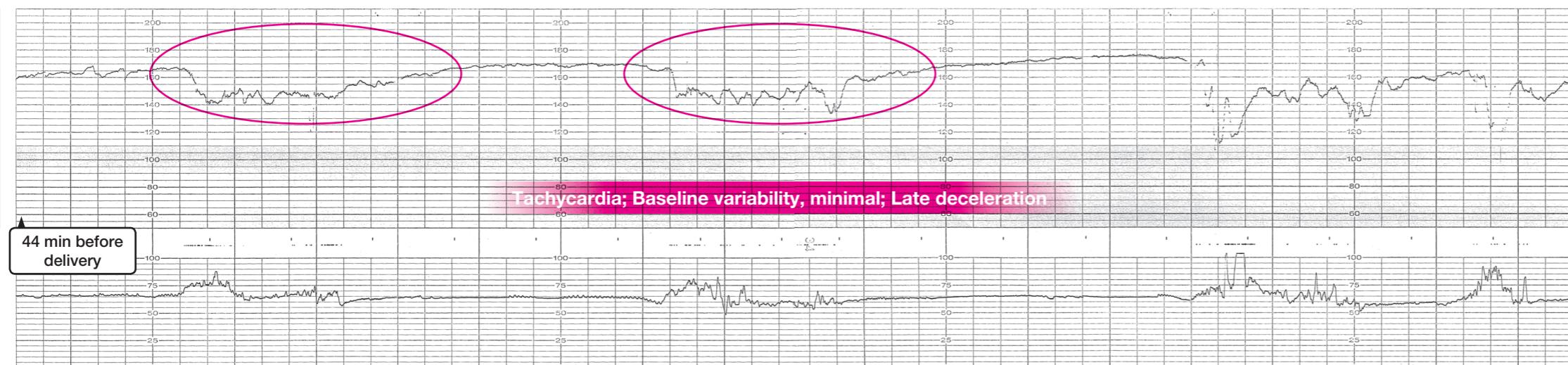
Body temperature 36.4 °C



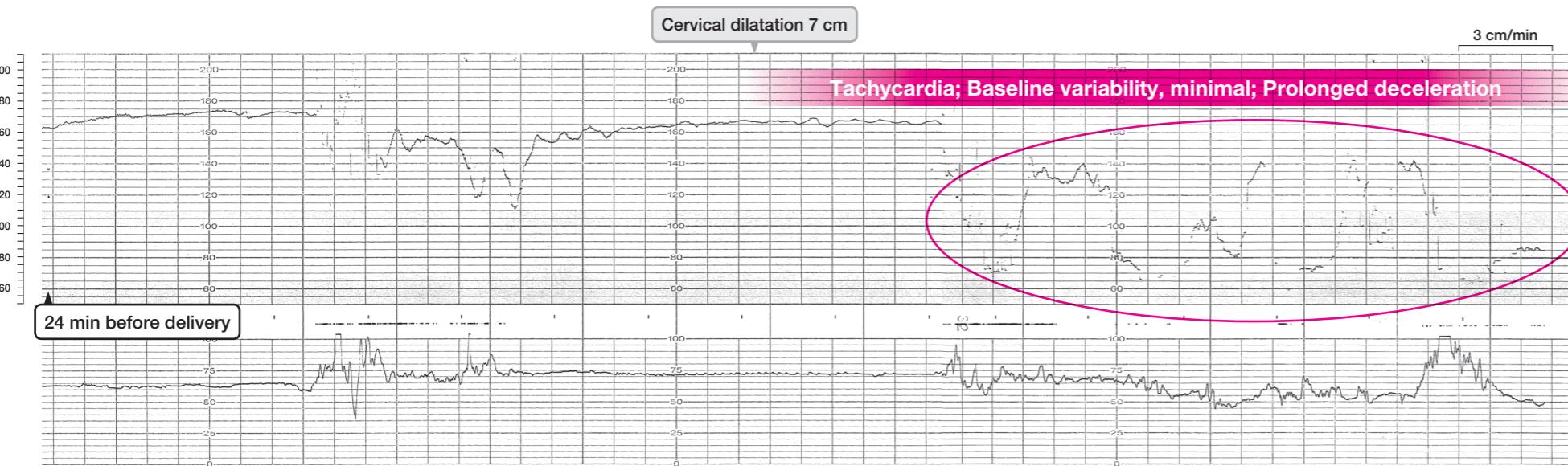
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Before delivery



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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:
Entanglement of the umbilical cord (a single loop)
Histopathological examination ► Chorioamnionitis;
Funisitis

- Causes of the development of cerebral palsy in the cause analysis report
Unknown or unspecified causes

Summary

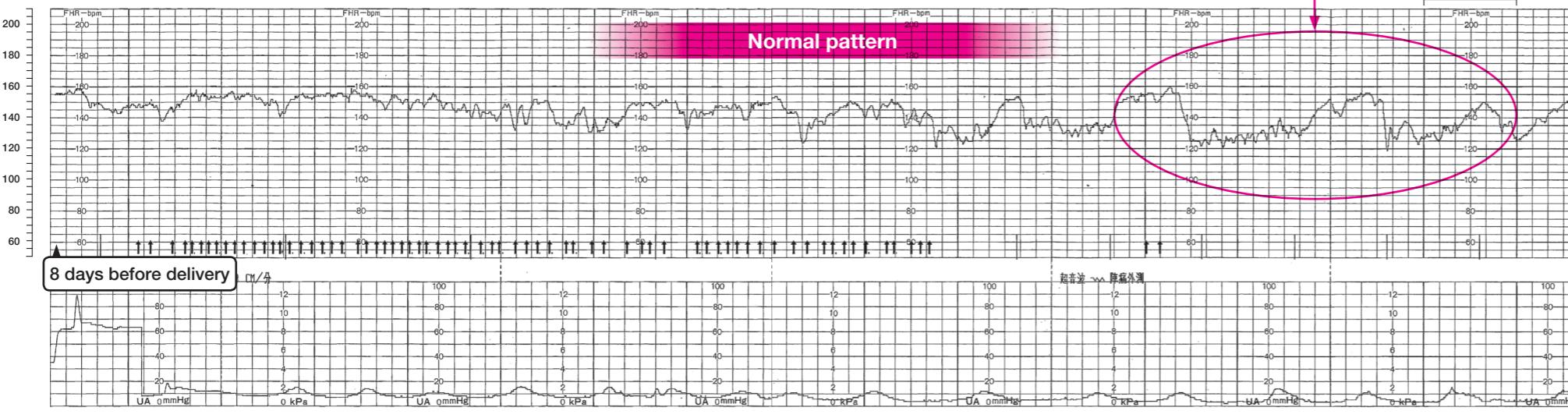
Gestational weeks 39 weeks' gestation

Risk factors None

Birth weight 2600 g level

Delivery course The woman was admitted to hospital because of onset of labor. ► Drip infusion of oxytocin was used for augmentation of labor. ► Baby was delivered vaginally.

At the outpatient prenatal care
(37 weeks of gestation)



Cautions in interpretation

The tracing in the second column, shows that the baseline variability has clearly decreased and the accelerations have disappeared as compared to the tracing in the first column.

On admission (7 days after the last outpatient prenatal care)

20 h 38 min before delivery

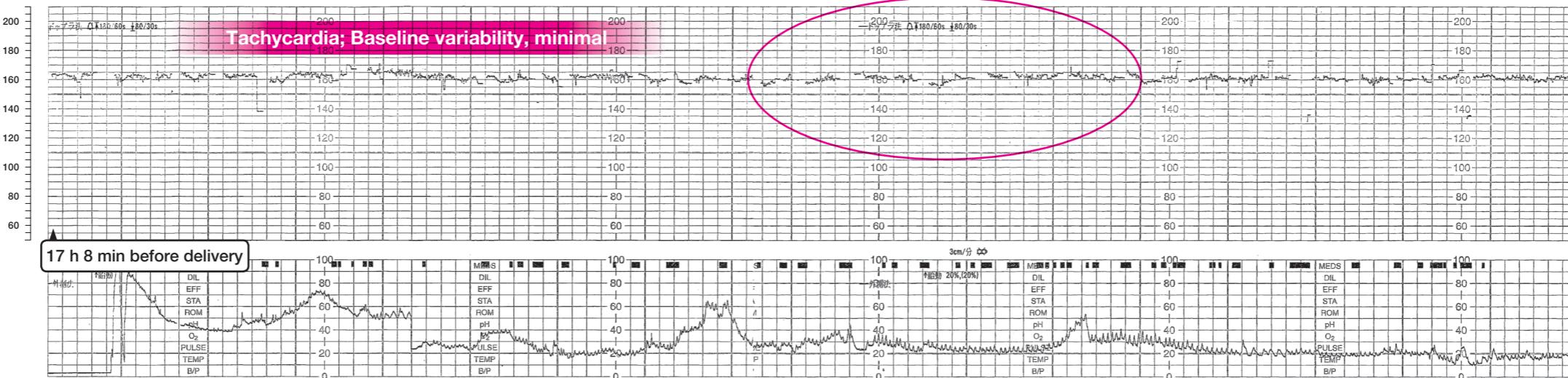
Onset of labor

17 h 28 min before delivery

The woman was admitted to hospital.

Cervical dilatation 2 cm

Bloody show



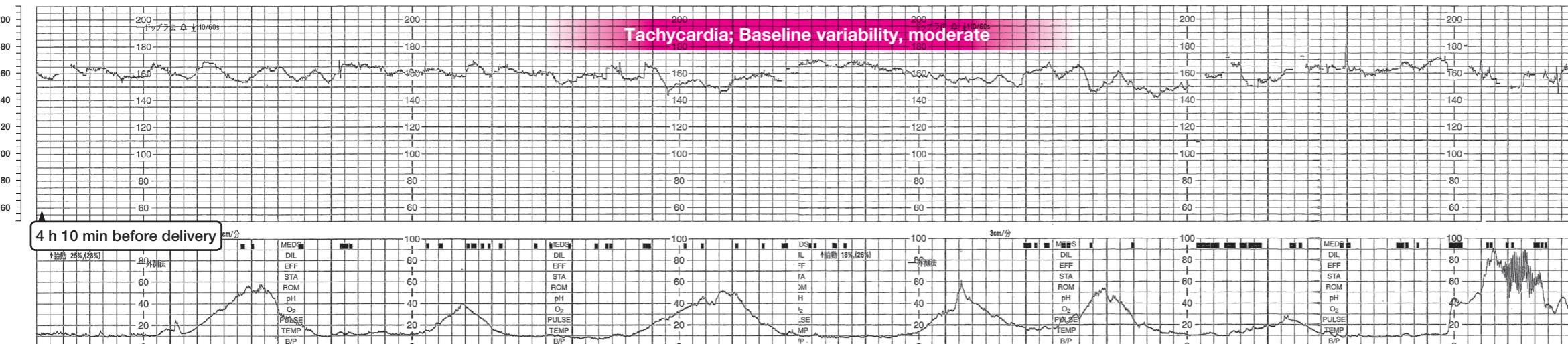
7 h 28 min before delivery

Rupture of membranes;
Cervical dilatation 3 cm

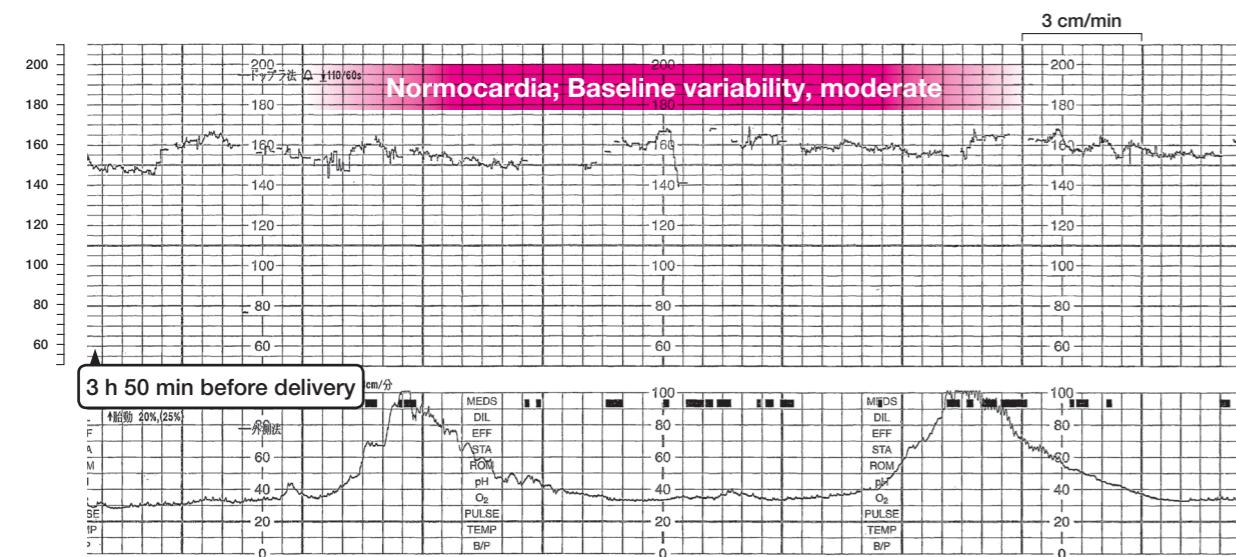
5 h 55 min before delivery

Artificial rupture of membranes was performed; Meconium staining
Cervical dilatation 5-6 cm

During hospitalization

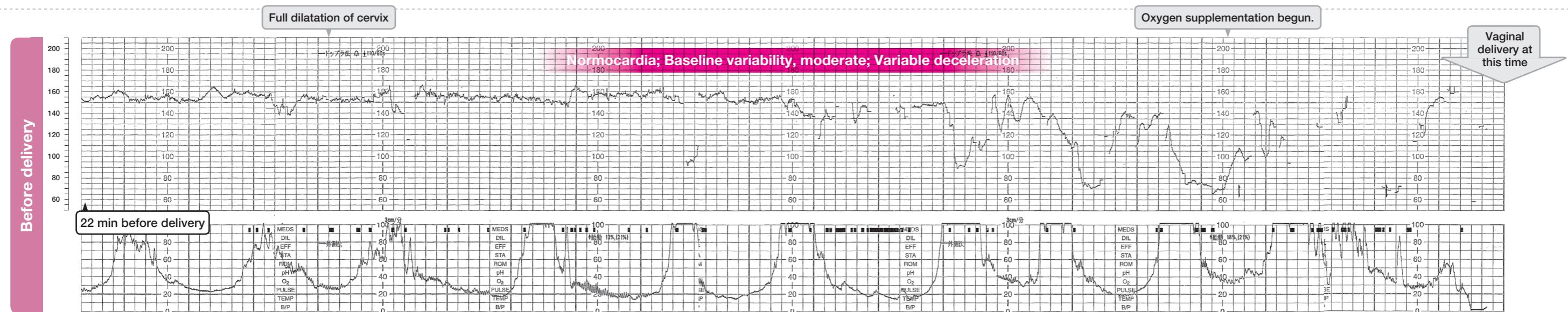


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1 h 28 min before delivery

Cervical dilatation 6-7 cm
Oxytocin drip infusion begun
for augmentation of labor
because of a diagnosis of
weak pains.



Findings associated with delivery

- Umbilical artery pH was 7.2 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 (a single loop);
Meconium staining
Histopathological examination ► No information

- Causes of the development of cerebral palsy in the cause analysis report
Unknown or unspecified causes

Summary

Gestational weeks 39 weeks' gestation

Risk factors Fetal growth restriction, obesity

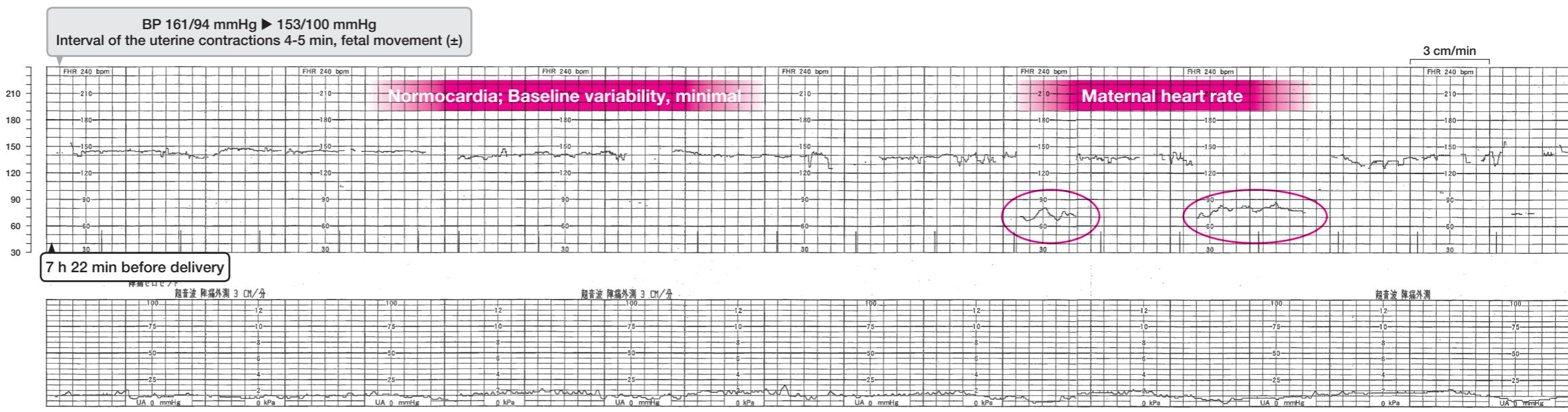
Birth weight 2400 g level

Delivery course

The woman was admitted to hospital because of onset of labor. ► Drip infusion of oxytocin was used for augmentation of labor. ► Baby was delivered vaginally.

On admission

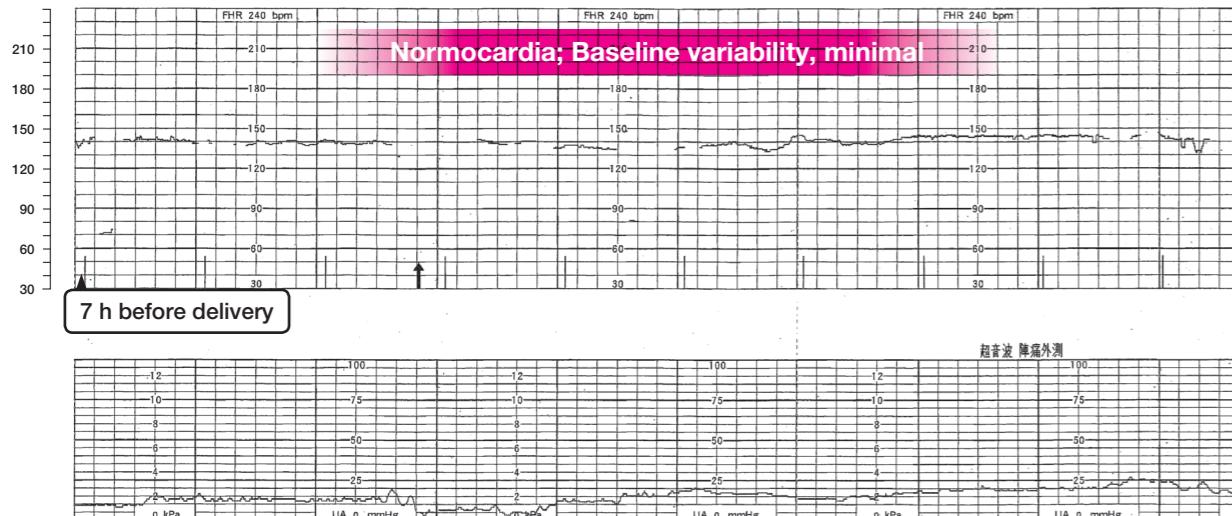
7 h 42 min before delivery
Onset of labor



3 cm/min

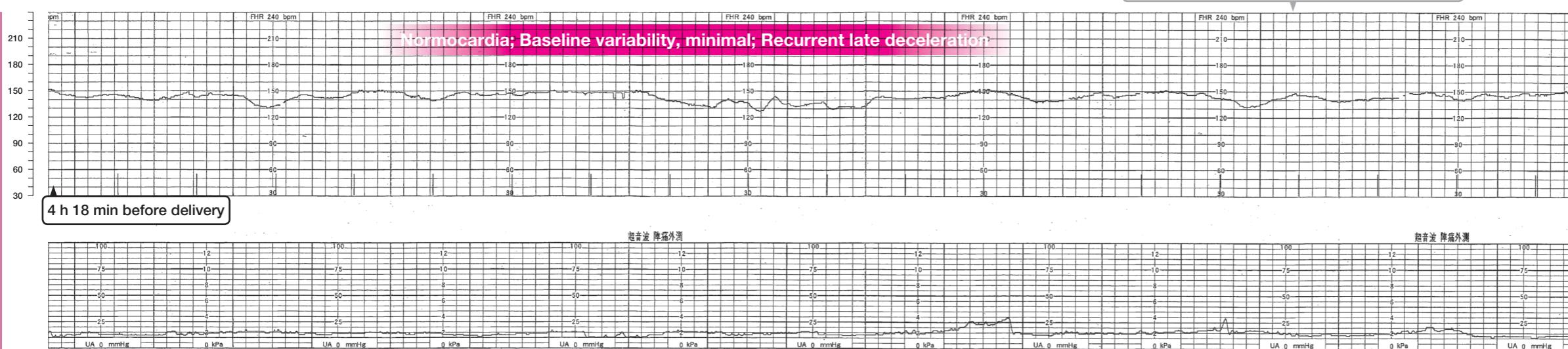
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During hospitalization

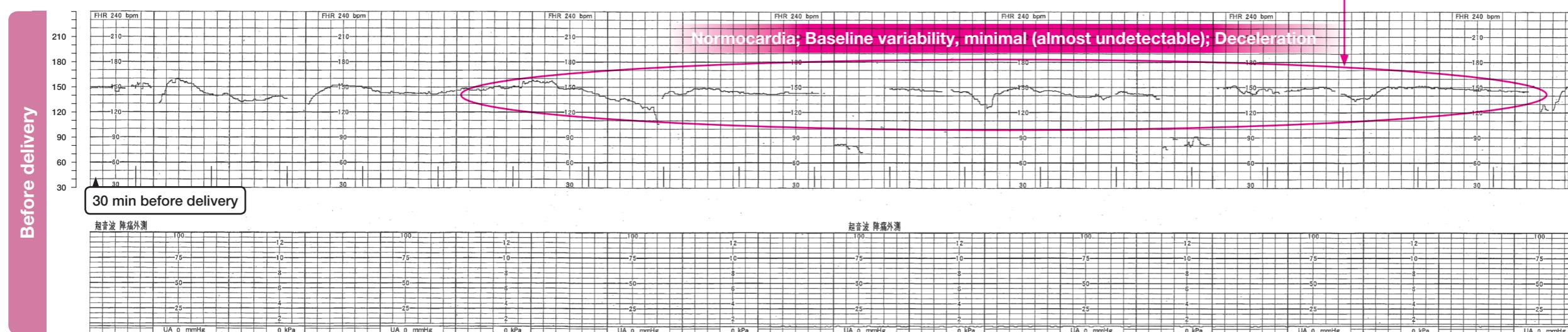
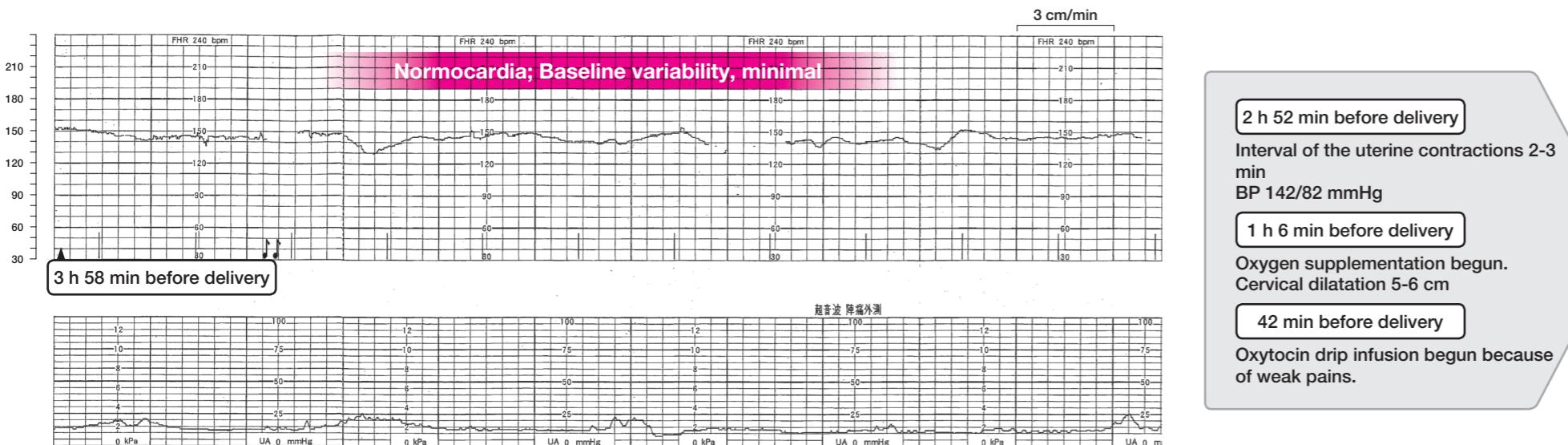


5 h 47 min before delivery
Cervix was closed

Fetal movement (±)
Maternal repositioning; Vibroacoustic stimulation



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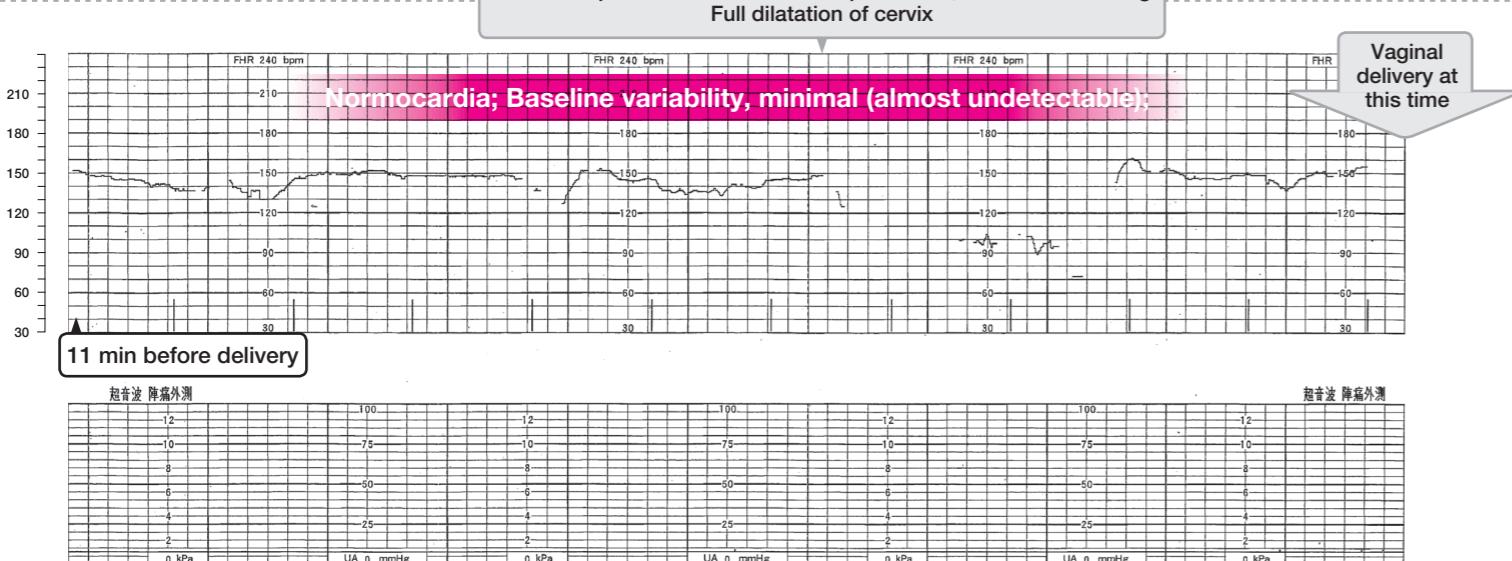
Cautions in interpretation

The fetal heart rate patterns were consistent with recurrent late decelerations.

Uterine contraction patterns are important to interpret deceleration patterns.

Tocodynamometers should be placed at the appropriate site for accurate recording of uterine contractions.

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Findings associated with delivery

- Umbilical artery pH was 7.1 level
- Newborn course:
Apgar score: 6 at 1 min
8 at 5 min
- Findings of the amniotic fluid, umbilical cord, and placenta:
Meconium staining
Histopathological examination ► Infarct regions and thrombus in the placenta

- Causes of the development of cerebral palsy in the cause analysis report
Unknown or unspecified causes



During hospitalization at the transport source birthing facility

39 h 39 min before delivery

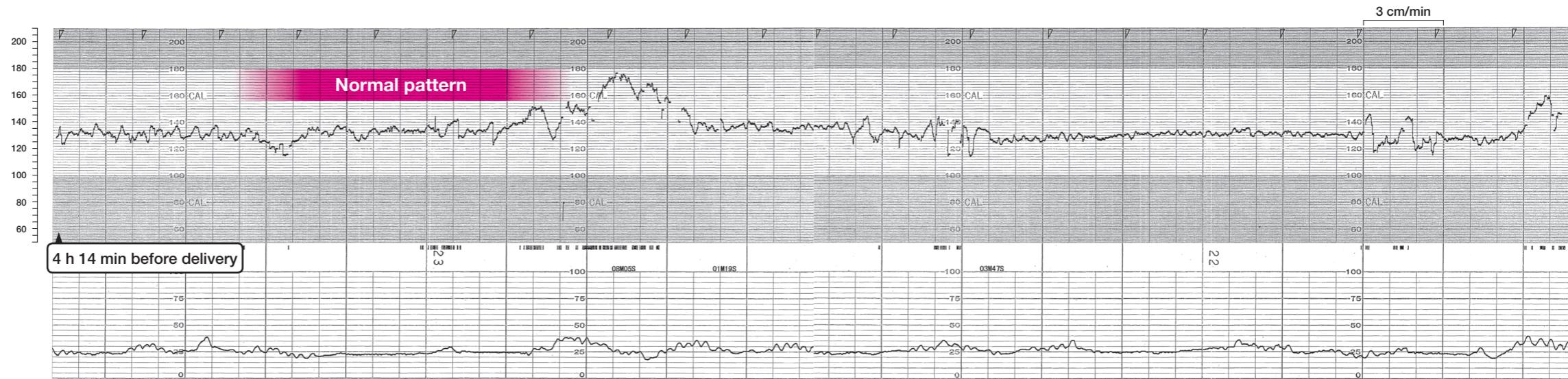
The woman was admitted to hospital. She noted uterine contractions at 15- to 20-minute intervals. Cervical dilatation a half fingertip dilated; Rupture of membranes.

11 h 9 min before delivery

Cervical dilatation 2.5 cm
Oxytocin drip infusion begun.

10 h 49 min before delivery

Onset of labor

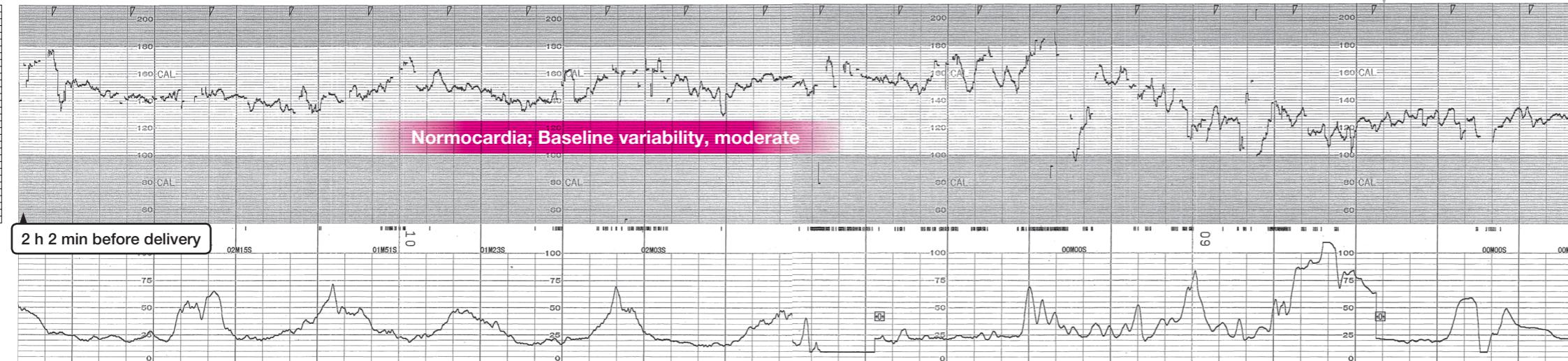


3 h 29 min before delivery

Cervical dilatation 4-5cm

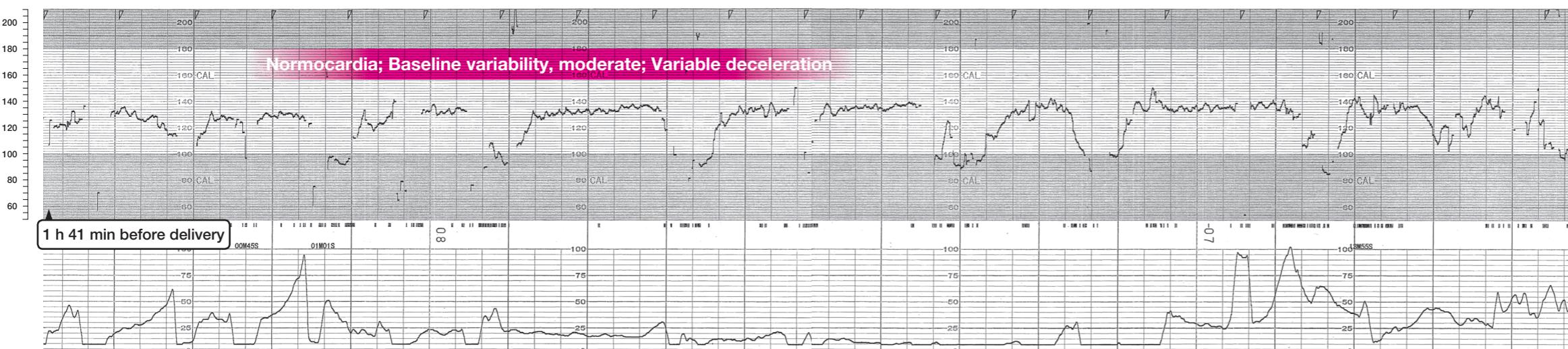
During hospitalization at the transport source birthing facility

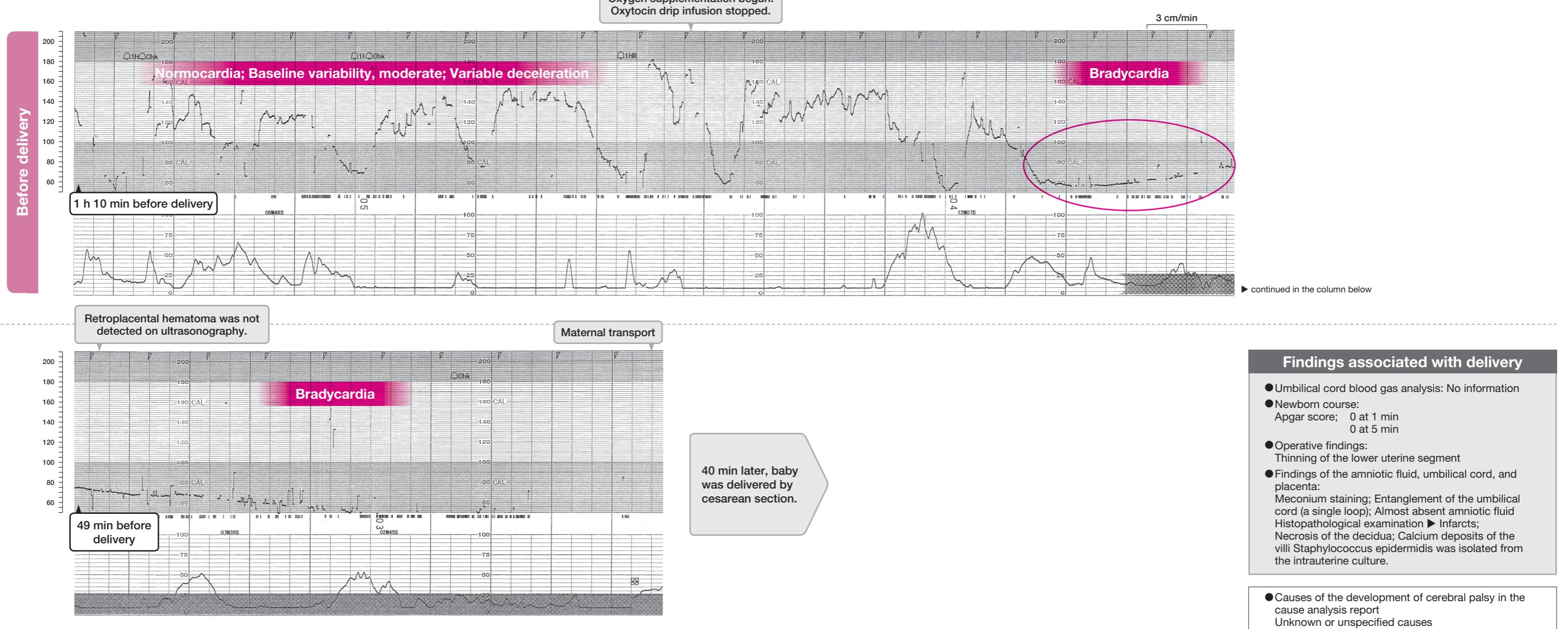
Normocardia; Baseline variability, moderate



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Normocardia; Baseline variability, moderate; Variable deceleration





Summary

Gestational weeks 39 weeks' gestation

Risk factors

Pregnancy-induced hypertension (preeclampsia)

Birth weight

2600 g level

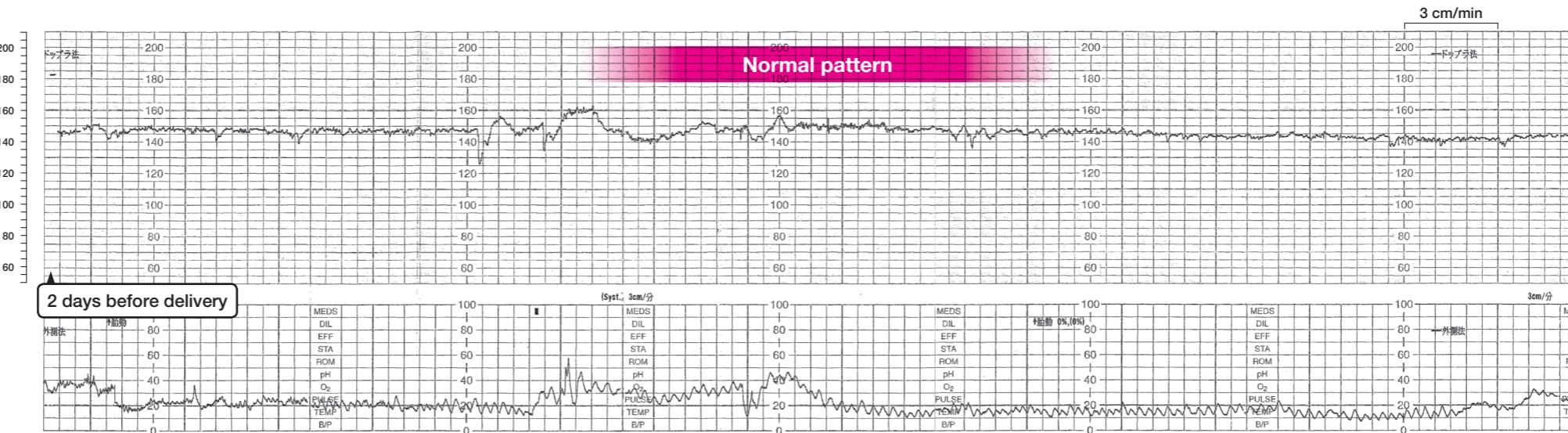
Delivery course

The woman was admitted to hospital for the management of pregnancy-induced hypertension. ► Onset of labor. ► Vacuum extraction was performed based on the diagnosis of non-reassuring fetal status.

On admission

2 days before delivery

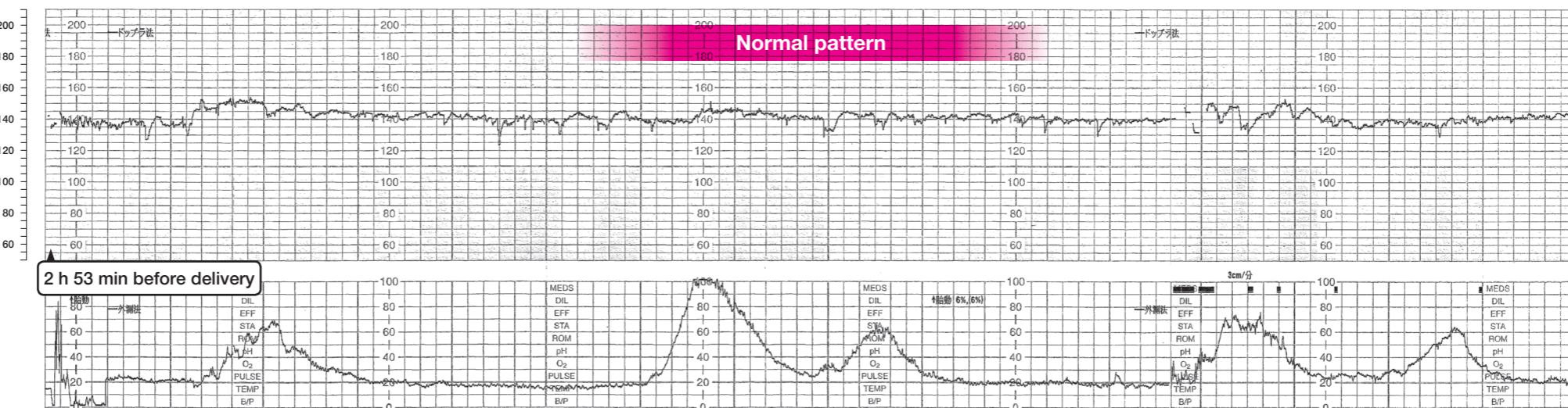
She was admitted to hospital for the management of pregnancy-induced hypertension.
BP 142/92 mmHg
She began taking an oral antihypertensive drug.
Urinalysis (24-hour creatinine clearance 219.6 L/day, proteinuria 5762 mg/day)



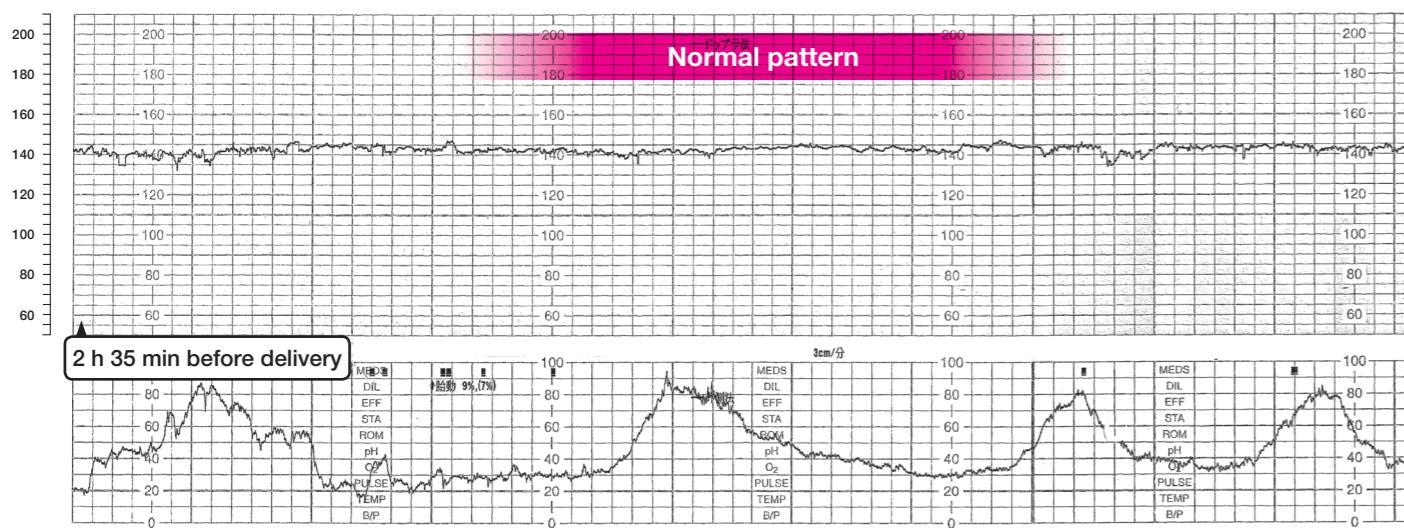
During hospitalization

4 h 8 min before delivery

Onset of labor



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1 h 8 min before delivery

Interval of the uterine contractions 4 min; A small amount of vaginal bleeding
The FHR was 140 bpm level on auscultation.

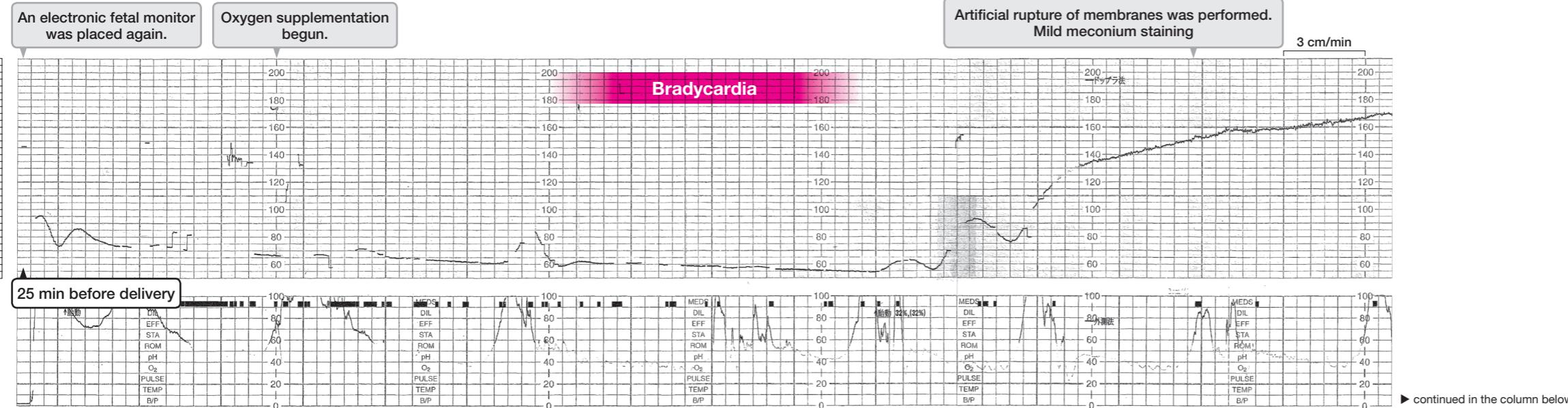
48 min before delivery

Bloody discharge increased.

38 min before delivery

Full dilatation of cervix

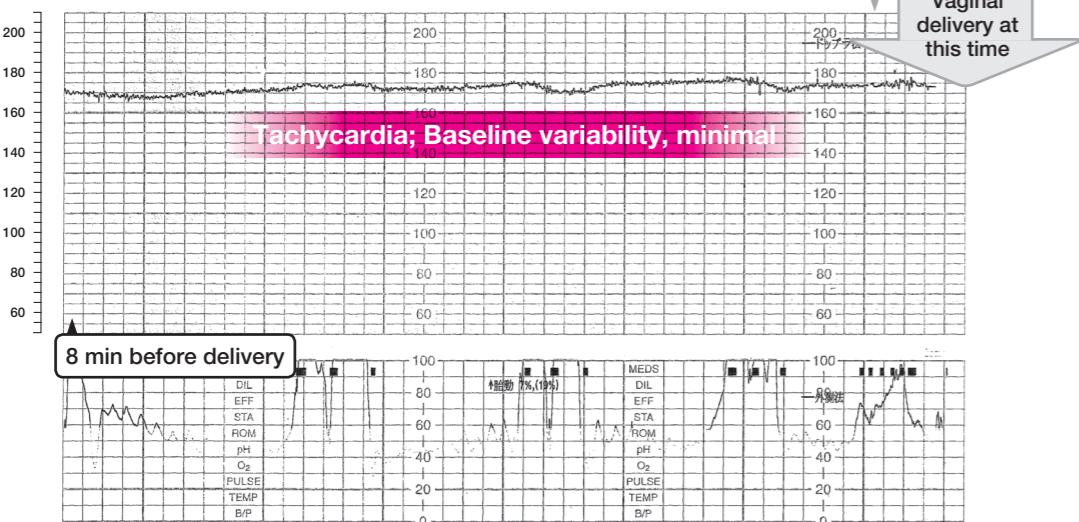
Before delivery



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Vacuum extraction begun.

Vaginal delivery at this time



Findings associated with delivery

- Umbilical artery pH was 7.0 level
- Newborn course:
Apgar score; 4 at 1 min
4 at 5 min
- Findings of the amniotic fluid, umbilical cord, and placenta:
Histopathological examination ► A few infarct changes

- Causes of the development of cerebral palsy in the cause analysis report
Unknown or unspecified causes