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# Insensitivity to Pain of Uterine Contractions: A Case Report at a Private Secondary Health Institution in Southern Nigeria

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*Abstract*

*Ordinarily the labour process itself is expected to be painful as a result of the uterine contractions. However, this might not always be the case, as we have illustrated with the case presented here. This case is unique in that unlike Congenital Insensitivity to Pain with Anhidrosis (CIPA) which affects the entire pain pathways, the loss of pain sensation in this case is restricted to the uterus only. It may be considered a natural or heritable form of labour analgesia.*

*Case: Presented is a 29 year old primigravida with chronic hypertension who had induction of labour at term. She did not perceive the uterine contractions or felt any pain despite the fact that she was having regular uterine contractions which were clinically palpable, with peak contraction pressures of 100mmHg on cardiotocography (CTG). She only reported pain in the vagina during vaginal examinations and in later stage of labour reported sensation of pressure radiating towards the vagina. Pain sensation was intact in other parts of her body. She said her mother had similar experience in all her deliveries.*

*Key words: insensitivity, uterine contractions, labour.*

## INTRODUCTION

Labour is defined as onset of painful, regular uterine contractions with progressive cervical dilatation and effacement resulting in descent of the presenting part and expulsion of the products of conception per vagina with minimal injury to both mother and baby. Perceived pain in labour has been found to be dependent on the intensity and pattern of uterine contractions.[1] Ordinarily the labour process itself is expected to be painful and this is as a result of the uterine contractions. However, this might not always be the case, as we have illustrated with the case presented here.

A rare pathological disorder known as "Congeintal Insensitivity to Pain (CIP)" exists and it refers to a condition in which a person does not perceive physical pain. This congenital inability to perceive pain has been linked to a loss-of-function mutations in the gene coding for the sodium channel Nav1.7.[2-6] This voltage-dependent sodium channel is expressed preferentially on peripheral nociceptors and sympathetic ganglia.[2]

A number of authors have reported cases of "Congenital Insensitivity to Pain with Anhidrosis (CIPA)", an autosomal recessive condition in which the affected individual has episodes of fever, inability to sense pain despite the fact that all other sensory modalities remain intact or minimally impaired and such patients also exhibits signs of self-mutilation, mental retardation and little or no perspiration.[7-10] Self mutilation in many cases are often dental such as injury to the tongue,[8,9] while some have reported charcot arthropathy in some patients.[11] There is a familial tendency to this disorder as it has been reported in siblings in a case report by Habib S et al.[12] A number of these complications require surgery. However it has been found that they have decreased peripheral and central norepinephrine activity; and coupled with the anhidrosis they have, they may develop hyperthermia and hypotension during the peri-operative period.[13]

Here we report a case of "Insensitivity to Pain of Uterine Contractions [IPUC]", another rare condition. This case is unique in that unlike CIPA which affects the entire pain pathways, the loss of pain sensation in this case is restricted to the uterus only. It may be considered a natural or heritable form of labour analgesia.

## CASE

Mrs A. U. was a 29 year old medical doctor, a primigravida and a chronic hypertensive who booked at 34 weeks gestational age on June 10, 2013 and had been on oral Labetalol 100mg daily with good control. Her booking parameters were satisfactory. Antenatal care was uneventful until 37 weeks gestational age when her blood pressure became uncontrolled (blood pressure was 166/114mmHg and urinalysis showed 1+ proteinuria but no glycosuria) necessitating admission for blood pressure stabilization and induction of labour on July 3, 2013. Following initial administration of intravenous hydrallazine 5mg slowly over 5 -10 minutes, she was maintained on oral alpha methyl dopa 500mg 8hourly and oral Nifedipine 20mg daily with fair

control. Her symphysiofundal height was 38cm, fetus was in longitudinal lie and cephalic, the head was not engaged and the fetal heart tone was normal. Cervix was unfavourable with a Bishop score of 1/13 necessitating cervical ripening same day with extra-amniotic Foley's catheter.

Cervical assessment the following day revealed a soft, posterior cervix, 80% effaced, internal cervical os 4cm dilated and presenting part was at station 0-1 (Bishop's score = 10/13). Membranes were intact. She had artificial rupture of membranes (ARM) with synchronous induction of labour with 5i.u. of syntocinon in 500mls of 5% Dextrose in water infusion, commencing at 10 drops per minute at 11.15hours and titrated as per our labour ward protocol. She had continuous cardiotocographic (CTG) monitoring in labour *(Fig. 1a and 1b)* and labour was managed partographically *(Fig 2)*.

At 15.15 hours, she was on 5i.u. of syntocinon infusion at 60 drops per minute and having 4 – 5 strong contractions in 10 minutes lasting 45secs. Her pulse rate was 104 beats per minute, her blood pressure was 140/100mmHg, fetal heart beat was 135 – 141 beats per minute and was regular. Vaginal examination revealed a soft cervix, central in location, almost fully effaced, internal cervical os was 6cm dilated, presenting part was vertex and at station 0 – 1, right occipito-posterior (ROP) position, there was no caput or moulding and liquor was clear.

She however did not perceive the uterine contractions or felt any pain except during vaginal examination only. Pain sensation was also intact in other parts of her body. She said her mother had similar experience in all her deliveries and had earlier informed her that she might experience the same.

At 19.15 hours, contractions were still adequate as she was having 3 – 4 strong contractions in 10 minutes lasting 45 – 50 seconds. She still did not feel any pain. Fetal heart sound was 140 – 161 beats per minute and was regular. Cervical os was still 6cm dilated, presenting part was at station 0 – 1 and in ROP position with caput 1+ but no moulding and liquor was clear.

At 20.14 hours, persistent fetal bradycardia (FHR = 94 – 110 beats per minute) was noted on CTG *(Fig 1b)*. Syntocinon infusion was discontinued and patient nursed in left lateral position. One (1) litre of 0.9% Normal saline was rushed in and oxygen was administered via face mask at 6 – 8L/min. Delivery was effected by an emergency caesarean section after obtaining an informed consent.

Findings at caesarean section were a well formed lower uterine segment, clear liquor, a live female baby in cephalic presentation, ROP position, caput 2+, birth weight 3.2kg and APGAR score 6 at 1 minute and 10 at 5 minutes, anterofundal placenta, both Fallopian tubes and ovaries appeared grossly normal and estimated blood loss was 300mls.

Her post-operative recovery was uneventful. She was given a pain assessment form to assess subjectively her pain perception in labour *(Fig. 3a and 3b)*.

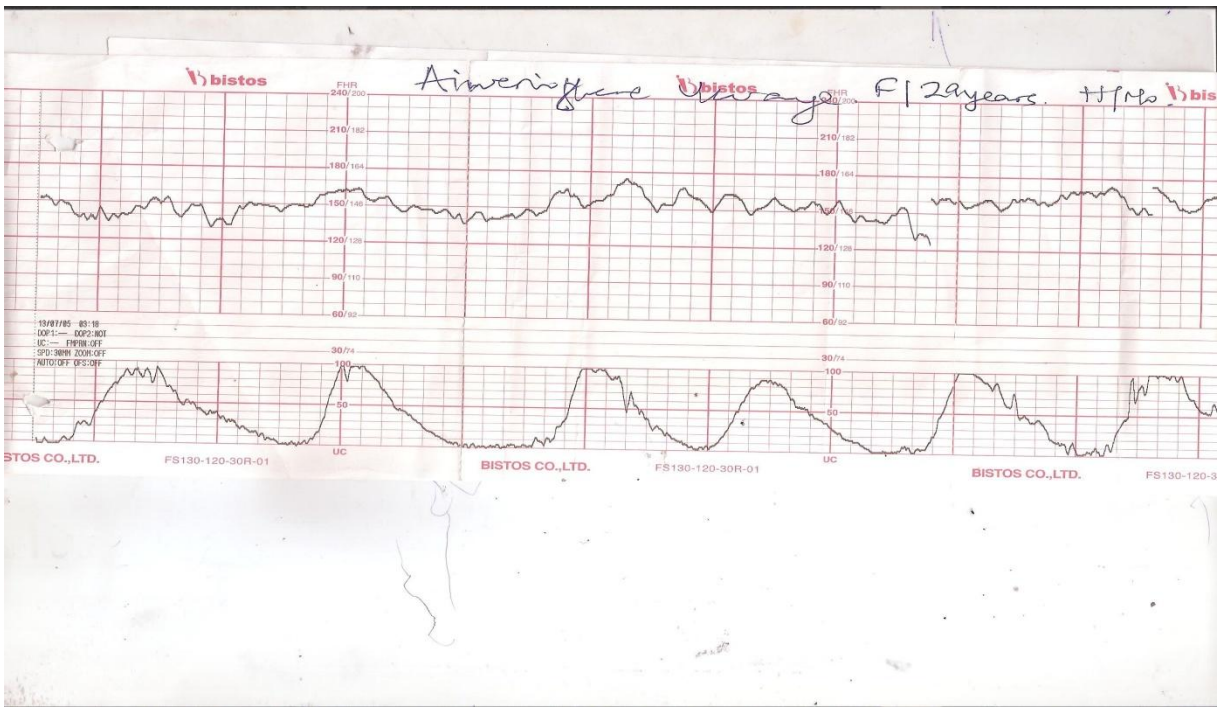



Figure 1a: Initial CTG tracing illustrating regular and adequate uterine contractions of good intensity.

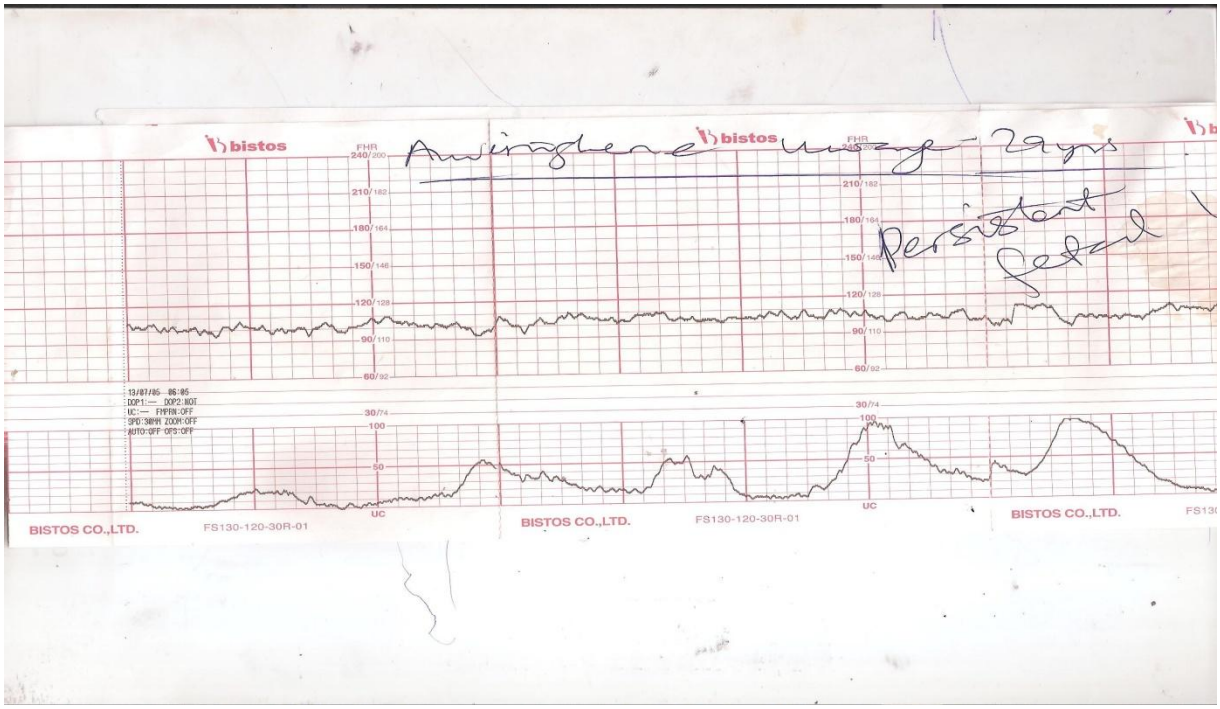



Figure 1b: CTG tracing showing persistent fetal bradycardia.

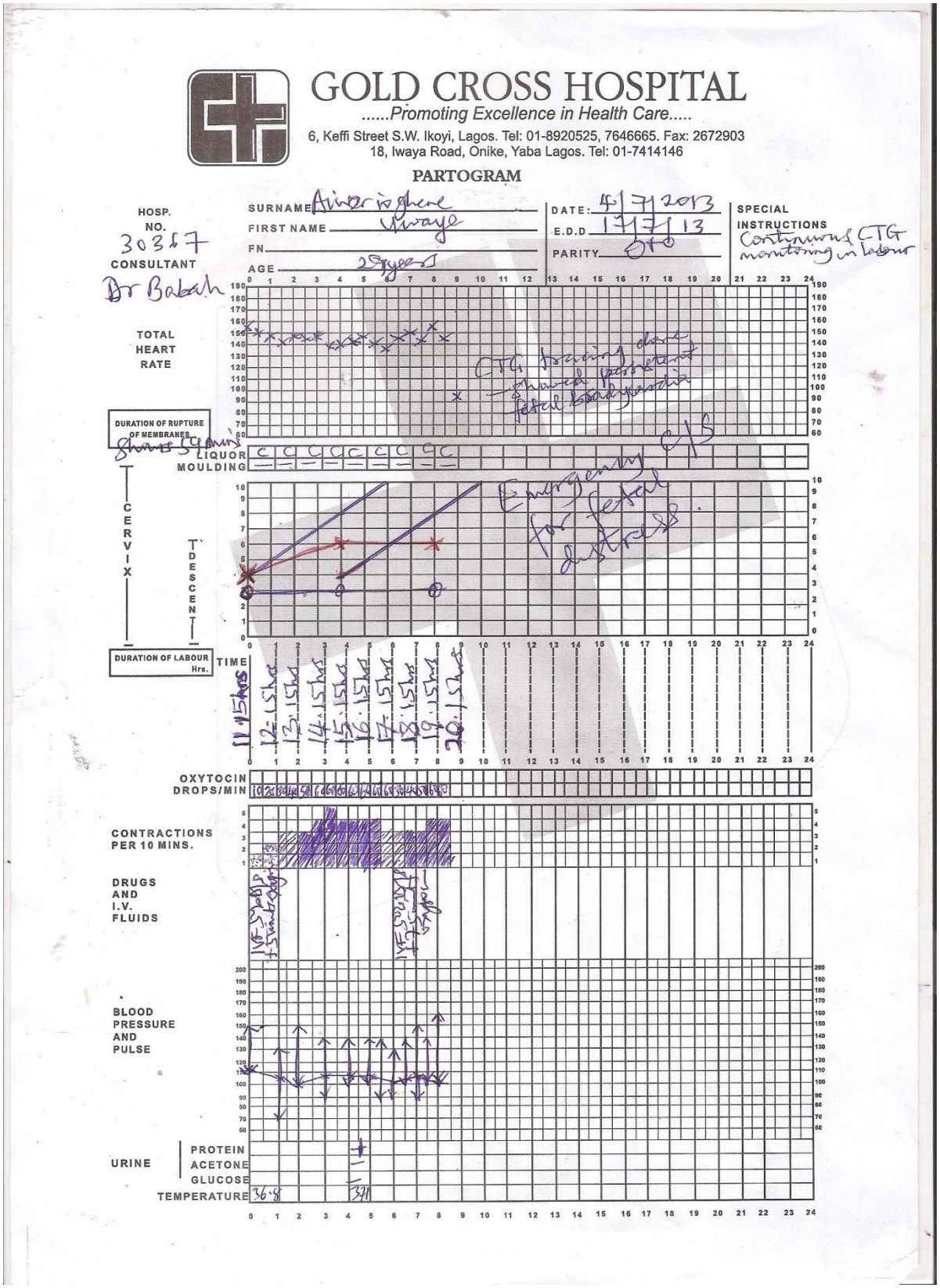
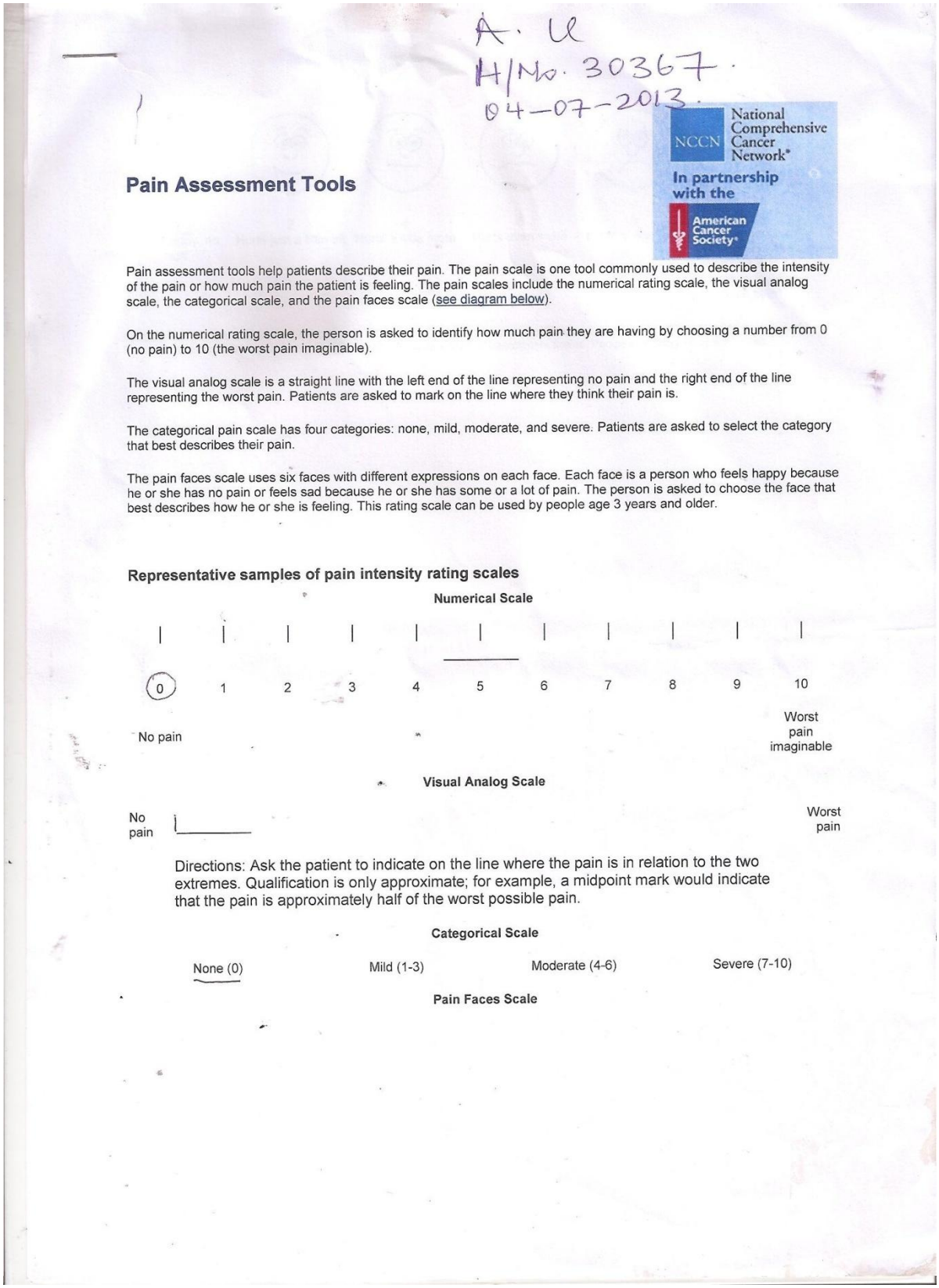



Figure 2: Partograph showing the labour events for Mrs A.U.



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## Pain Assessment Tools

Pain assessment tools help patients describe their pain. The pain scale is one tool commonly used to describe the intensity of the pain or how much pain the patient is feeling. The pain scales include the numerical rating scale, the visual analog scale, the categorical scale, and the pain faces scale (see diagram below).

On the numerical rating scale, the person is asked to identify how much pain they are having by choosing a number from 0 (no pain) to 10 (the worst pain imaginable).

The visual analog scale is a straight line with the left end of the line representing no pain and the right end of the line representing the worst pain. Patients are asked to mark on the line where they think their pain is.

The categorical pain scale has four categories: none, mild, moderate, and severe. Patients are asked to select the category that best describes their pain.

The pain faces scale uses six faces with different expressions on each face. Each face is a person who feels happy because he or she has no pain or feels sad because he or she has some or a lot of pain. The person is asked to choose the face that best describes how he or she is feeling. This rating scale can be used by people age 3 years and older.

**Representative samples of pain intensity rating scales**

**Numerical Scale**

0 1 2 3 4 5 6 7 8 9 10

No pain — Worst pain imaginable

**Visual Analog Scale**

No pain — Worst pain

Directions: Ask the patient to indicate on the line where the pain is in relation to the two extremes. Qualification is only approximate; for example, a midpoint mark would indicate that the pain is approximately half of the worst possible pain.

**Categorical Scale**

None (0) Mild (1-3) Moderate (4-6) Severe (7-10)

**Pain Faces Scale**

Figure 3a: Completed pain assessment form for Mrs A.U (first page).

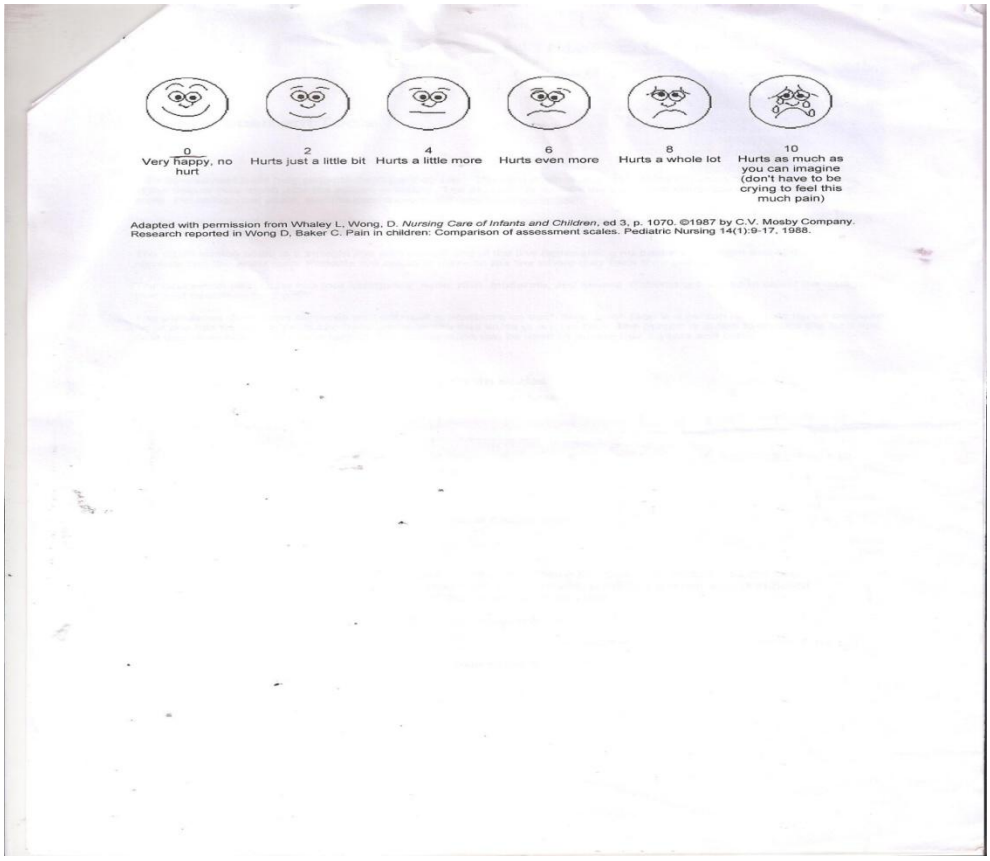


Figure 3b: Completed pain assessment form for Mrs A.U (second page).

## DISCUSSION

The case presented is quite rare in obstetrics and may serve as a motivating factor for scientists to carry out more in-depth researches on the neuro-endocrine pathways in relation to labour. The patient reported never felt any pain of uterine contractions. She even slept off for about 30 – 40 minutes snoring at the peak of uterine contractions while in established labour and was smiling and obviously happy most of the times in labour, as she found the whole process fascinating. We did not have to give any analgesia while labour lasted. She only had spinal anaesthesia during caesarean section with no untoward effects. We wished she had a vaginal delivery as this would have made us study the pattern of events in second stage of labour. For instance, we would have known if second stage of labour will be painless as well and if the duration will be affected in anyway, as has been documented in parturients who had epidural analgesia in labour.

Although this may sound absolutely beneficial, it may not always be, just as it is in cases of CIPA. Such patients with IPUC stand the risk of unknowingly being in established labour until they are in second stage and may not be able to

access a health facility and thus deliver at home, on the road or in other unhygienic environments like market places with no trained health personnel to attend to them and thus develop series of fetomaternal complications. Hence women with previous history may need to be admitted in the hospital at term to avert these problems.

The cause of this insensitivity to the pain of uterine contractions is unknown. However, possible aetiopathogenesis might be in relation to beta-endorphin levels, as it has been found that the level of this hormone increases during pregnancy and childbirth. Beta-endorphin which is secreted from the pituitary gland, has been found to have properties similar to pethidine, morphine and heroin and work on same receptors in the brain. It induces feelings of pleasure and euphoria during childbirth.

It has been found in some studies that there exist a correlation between pain and secretion of beta-endorphin during labour.[14,15] Beta-endorphin has been found to be significantly higher in pregnant women than in non-pregnant women, with a slight increase as labour progresses and it is thought that the opiate-active beta-endorphin may increase the ability of women to tolerate acute pain.[15] Varrassi G et al in an earlier study found plasma beta-endorphin to be elevated in pregnant women who exercised throughout pregnancy compared to pregnant women who do not exercise, while cortisol, human growth hormone and prolactin decreased; thus exercise conditioning during pregnancy appears to be beneficial in reducing pain perception in labour and in reducing stress levels in labour.[16] Going by these earlier findings, could excessive production of beta-endorphin or exaggerated response of the receptors be responsible for insensitivity to labour pain? If this be the case, there will be a need to conduct further research and find out if there is any correlation between beta-endorphin levels and insensitivity to pain of uterine contractions (IPUC).

Our patient also reported familial history in the mother. This further suggests that the cause of this insensitivity to pain of uterine contractions is likely to be an intrinsic genetic defect. This calls for further research.

## CONCLUSION

Active phase labour is generally known to be associated with pain. This might however, not always be the case, as some women might have painless labour without any form of analgesia. The cause of this is unknown but might be hereditary and due to an intrinsic genetic defect or mutations in the pain pathway, or due to an exaggerated hormonal influence such as an abnormal rise in the beta-endorphin levels in labour. Further research is however necessary to clarify the aetopathogenesis of insensitivity to pain of uterine contractions (IPUC).

**Consent:** An informed written consent was obtain from this patient for the publication of this case report and the accompanying images.

**Abbreviations:** CIP – congenital insensitivity to pain, CIPA – congenital insensitivity to pain

with anhidrosis, IPUC – insensitivity to pain of uterine contractions, CTG - cardiotococgrahpy, ARM – artificial rupture of membranes, ROP – right occipito-posterior.

**Conflict of interest:** The author hereby declares that there is no competing interest.

**Contributions of authors:**

**BOA:** consultant obstetrician in-charge of the case. Involved in the management of the patient and prepared this manuscript.

**OO:** consultant anaesthestist who provided the pain assessment tool and contributed immensely to the preparation of this manuscript.

**EMA:** medical officer who was involved in the management of this case and also contributed to the preparation of this manuscript.

All authors read and gave approval for the final manuscript to be published.

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