ORIGINAL RESEARCH PAPER

Obstetrics & Gynaecology

EFFECT OF VAGINAL PH ON EFFICACY OF DINOPROSTONE GEL FOR LABOUR INDUCTION

KEY WORDS:

Dr. V. Rajalakshmi MD.,Dgo Department Of Obstetrics And Gynaecology, Govt Rsrm Lying In Hospital, Stanley Medical College, Chennai – 13.

ABSTRACT

INTRODUCTION: Induction of labour can be defined as an intervention intended to artificially initiate uterine contractions resulting in progressive effacement and dilation of cervix. This should ideally result in the birth of the baby through vaginal route. The availability of newer induction techniques which are safer, more effective and predictable than the older techniques has made the process of induction more easier.

AIM OF THE STUDY:1. To evaluate the influence of vaginal pH on the efficacy of PGE2 gel for cervical ripening/labour induction. 2. To improve patient selection for PGE2 induction and reduce the incidence of failed induction with PGE2 gel.

METHODS: It is a Prospective study conducted in Govt. RSRM Lying In Hospital. Each participant underwent a speculum examination and vaginal pH value was assessed.The differences between the groups with respect to age, parity, Bishop score prior induction, need for a second induction, time to enter into active phase of labour and the final mode of delivery were compared and analysed. The induction delivery interval, Caesarean section rates and indications, Birth weight and APGAR score of the babies were noted .

RESULTS: The most common indication for induction was post datism. Vaginal pH in the range of 5-6 appears to predict vaginal delivery more reliably and it is a better predictor of success of induction.

CONCLUSION: Findings of the study suggested that parity influences vaginal pH and vaginal pH itself has a significant effect on cervical ripening and the Bishop Score prior induction. Higher vaginal pH more often responds to a single induction and is more often associated with vaginal deliveries than LSCS. Hence knowing the vaginal pH prior induction could prove to be a useful tool in assessing the labour outcome of a patient undergoing labour induction with PGE2 gel.

INTRODUCTION

Induction of labour can be defined as an intervention intended to artificially initiate uterine contractions resulting in progressive effacement and dilation of cervix. This should ideally result in the birth of the baby through vaginal route. The more common indications include post term pregnancy, membrane rupture without labour, gestational hypertension, oligohydramnios, non reassuring fetal status and various maternal medical conditions such as chronic hypertension and diabetes (American College of Obstetricians and Gynaecologists, 2013b). Before induction one must ensure that the gestational age and fetal lung maturity is confirmed. Induction of labour is one of the most common interventions practiced in modern world. Overall throughout the world, up to 20 per cent of women have labour induced by one method or the other. Induction rates vary with practices and cultural backgrounds. The availability of newer oxytocics and induction techniques which are safer, more effective and predictable than the older techniques has made the process of induction more easier.

AIMS OF THE STUDY

1. To evaluate the influence of vaginal pH on the efficacy of PGE2 gel for cervical ripening/labour induction
2. To improve patient selection for PGE2 induction and reduce the incidence of failed induction with PGE2 gel.
3. To asses the labour outcome in induction with PGE2 by knowing the vaginal pH prior induction.
4. To asses whether vaginal pH itself has a significant effect on the Bishop score prior induction or not.

MATERIALS AND METHODS

METHODOLOGY

The Prospective study was conducted in Govt. RSRM Lying In Hospital, Chennai during the period of December 2016 to September 2017 after getting approval from the Institutional Ethical Committee. 100 patients who underwent induction of labour for various reasons were selected for the study and examined. Before other examinations were performed, each participant underwent a speculum examination and vaginal pH value was assessed by using pH indicator paper (both broad & narrow spectrum). The indicator paper was placed on the lateral vaginal wall between the two valves of Cusco's speculum until it became wet. Colour change of the strip was immediately compared with the manufacturer's colorimetric scale and the finding was recorded. A vaginal examination was then performed to determine the Bishop's score. Bishop score was assessed Cervical dilatation, cervical effacement/length, Cervical consistency, Cervical position, Fetal station. Each component is given a score of 0-2 or 0-3. The highest possible score is 13 and <5 is unfavourable that needs induction. All received intracervically placed PGE2 gel 0.5 mg After ruling out all contraindications, All received intracervically placed PGE2 gel 0.5mg . Following application the patient is instructed to remain recumbent for at least 30 minutes. The patient is then continuously monitored. After 6 hrs depending on Bishop Score and uterine contraction either PGE2 gel was repeated (maximum 2 doses) or labour was augmented as per labour theatre protocol. The differences between the groups with respect to age, parity, Bishop score prior induction, need for a second induction, time to enter into active phase of labour and the final mode of delivery were compared and analysed. The induction delivery interval, Caesarean section rates and indications, Birth weight and APGAR score of the babies were noted and tabulated. Statistical analysis was done and P value <0.05 was considered significant.

Inclusion criteria

(1) An unfavourable cervical Bishop score of ≤ 5,
(2) Singleton pregnancy with vertex presentation and no contraindication to vaginal delivery.
(3) Assuring fetal heart rate.

Exclusion criteria

(1) Known hypersensitivity to prostaglandins
(2) Placenta previa
(3) Suspected chorioamnionitis
(4) Parity of >3
(5) A previous caesarean delivery or a history of uterine surgery
(6) Previous attempted induction of labour for this pregnancy
(7) Cephalopelvic disproportion.

RESULTS AND ANALYSIS

TABLE :1 GESTATIONAL AGE DISTRIBUTION OFTHE STUDY GROUP

GESTATIONAL AGE IN WEEKS	FREQUENCY	PERCENT
UPTO 38	29	29.0
38-40	25	25.0
ABOVE 40	46	46.0
TOTAL	100	100.0

This table depicts the gestational age distribution of the study

group. About 58 patients were induced at the gestational age of 40 weeks to 40 weeks 6 days interval. If the NST and AFI monitoring is normal routine induction was done at 40 weeks 3 days

TABLE : 2 MODIFIED BISHOP'S SCORE DISTRIBUTION IN THE STUDY GROUP

Bishop score	Frequency	Percent
1	7	7.0
2	32	32.0
3	43	43.0
4	17	17.0
5	1	1.0
Total	100	100.0

This table shows the distribution of Modified Bishop's Score in the study group. 43 patients had a pre-induction Modified Bishop's Score of 3.The median Modified Bishop's Score was 3.

TABLE 3 VAGINAL pH DISTRIBUTION AMONG THE STUDY GROUP

VAGINAL pH	Frequency	Percent
4.0	12	12.0
4.5	28	28.0
5.0	24	24.0
5.5	32	32.0
6.0	4	4.0
Total	100	100.0

The patients in the study group had vaginal pH in the range of 4 to 6.60 patients had a vaginal pH of more than 5. The mean vaginal pH in the study group was 5. In the study conducted by Ramsey et al the median vaginal pH was 5.5

TABLE 4 : MODE OF DELIVERY DISTRIBUTION IN THE STUDY GROUP

	Frequency	Percent
6	3	3.0
7	95	95.0
8	1	1.0
9	1	1.0
Total	100	100.0

This table shows the distribution of mode of delivery in the study group. 56 patients had normal vaginal delivery and 44 patients underwent LSCS. 3 patients delivered with Outlet forceps with episiotomy and 4 patients with vacuum with episiotomy.

TABLE 5: ONE MINUTE APGAR DISTRIBUTION IN THE STUDY GROUP

Mode of Delivery	Frequency	Percent
LSCS	44	44.0
LN with Epi	49	49.0
Outlet with Epi	3	3.0
Vacuum with Epi	4	4.0
Total	100	100.0

In this study 95% of the babies had a 1 minute APGAR of 7.

CONCLUSION

Induction of labour is one of the most common obstetric practices carried out in the world. Compared to spontaneous onset of labour, induction of labour is complicated by a higher rate of Caesarean section. This difference is greater for nulliparous women with unfavourable cervix. The pH is important in terms of the design and the efficacy of vaginal drug delivery systems. To assess the pre induction favorability of the cervix vaginal pH appears to be better tool. Vaginal pH measurement is easy to do. So this study was conducted with 100 patients who underwent induction of labour at 37 to 40weeks 6 days in our hospital. The most common indication for induction was postdated pregnancy. PGE2 gel induction was done and the results were tabulated and analysed.Vaginal pH in the range of 5 to 6 was found to be a better predictor of normal vaginal delivery than Modified Bishop's Score. This is a objective, more reproducible and quantitative method which can be performed easily anywhere. Therefore more liberal use of vaginal pH for pre induction cervical assessment in term pregnancy would enable obstetricians to predict the outcome of labour induction and to select a safe and more efficient policy of induction.

Hence, findings of the present study suggest that parity influences vaginal pH and vaginal pH itself has a significant effect on cervical ripening and the Bishop Score prior induction. Higher vaginal pH more often responds to a single induction and is more often associated with vaginal deliveries than LSCS.

Hence knowing the vaginal pH prior induction could prove to be a useful tool in assessing the labour outcome of a patient undergoing labour induction with PGE2 gel. Further research is required to find various agents that would increase the vaginal pH thereby creating a favourable environment for PGE2 gel induction.

REFERENCES

1. Cochrane Database of Systematic Reviews. 2009. Issue 4. Art.No.CD003101. DOI:10.1002/1451858.CD003101.php2.
2. MacDonald PC, Casey ML. 1993.The accumulation of prostaglandins (PG) in amniotic fluid is an aftereffect of labour and not indicative of a role for PGE2alpha in the initiation of parturition. J Clin. Endocrinol Metab 76:1332;
3. EmbreyMp. 1969. The effect of prostaglandins on the human pregnant uterus. J Obstet. Gynaecol Br. Commonsw. 76:78389.25.
4. Sandhu SK, Tung R. Use of Foley s catheter to improve the cervical score prior to induction of labour. J Obstet. Gynaecol India. 1984;34:669-672.
5. Husslein P, Fuchs AR, Fuchs F. 1983. Oxytocin and prostaglandin plasma concentrations before and after spontaneous labour: evidence of involvement of prostaglandins in the mechanism. Wien KlinWochenschr. May 27;95(11): 367-71.
6. Karim SMM, Trussell RR, Patel RC, et al. 1968. Response of pregnant human uterus to PGE2 induction of labour. Br Med J. 4:621-23.
7. Keirse MJNC, van Oppen ACC. 1989. Comparison of prostaglandins and oxytocin for inducing labour In: Chalmers I, Enkin M, Keirse MJNC, eds. Effective Care in Pregnancy and Childbirth. Oxfore: Oxford University Press; 1080-1111.
8. Keirse MJNC. 1992. Therapeutic uses of prostaglandins. Bailliere s Clin Obstet Gynaecol. 6:787-808.
9. Leppert Pc.1995. Anatomy and physiology of cervical ripening. Clinical Obstet Gynaecol. 38:267-79.
10. Ludmin J, Sehdev HM.2000.Anatomy and physiology of the uterine cervix. ClinObstet Gynaecol. 43:433-39.
11. O Brien JM, Mercer BM, Cleary NT, Sibal BM. 1995. Efficacy of outpatient induction with low-dose intravaginal prostaglandin E2: a randomized, double-blind, placebo controlled trial. Am J Obstet Gynaecol. Dec; 173(6):1855-9.
12. O Brien WF. 1995. The role of prostaglandins in labour and delivery. Clin Perionatol.Dec;22(4):973-84.
13. Ogawa, M., Hirano, H., Tsubaki, H., Kodama, H., and Tanaka, T. 1998 The role of cytokines in cervical ripening: correlations between the concentrations of cytokines and hyaluronic acid in cervical mucus and the induction of hyaluronic acid production by inflammatory cytokines by human cervical fibroblasts. Am. J.Obstet. Gynaecol., 179, 105-110.
14. Ohel G, Rahav D, Rothbart H, Ruach M. 1996.Randomised trial of outpatient induction of labour with vaginal pge2 at 40-41 seeks of gestation versus expectant management. Arch Gynaecol Obstet. 258(3):109-12.
15. Rice GE. 1995. Glycerophospholipid metabolism and human labour. Re prod Fertil Dev. 7:613 622.
16. Romero R, Baumann P, Gonzales R, et al. 1994. Amniotic fluid prostanoid concentrations increase early during the course of spontaneous labour at term. Am J Obstet Gynaecol. 171:1613-20.
17. Van Dorp DA, Beerthuis RK, Nugteren DH, et al. 1964. The biosynthesis of prostaglandins. BiochimBiophysActa 90:204-7.
18. Von Gemund N, Scherjon S, LeCessie S, et al. 2004. A randomized trial comparing low dose vaginal misoprostol and dinoprostonefor, labour induction. Br J ObstetGynaecol 111:42.
19. Wing DA, Jones MM, Rahall A, Goodwin TM, Paul RH. 1995. A comparison of misoprostol and prostaglandin E2 gel for pre induction cervical ripening and labour induction. Am J ObstetGynaecol 172:1804.
20. Bernal AL. Overview of current research in parturition. ExpPhysiol 2001;86(2):213-22.