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ROLE OF *ELA, CAVYA, CITRAKA NASYA* DURING 1ST STAGE OF LABOUR

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ABSTRACT

Abnormal uterine contraction is one of the major causes of delayed labour leading to distress in both mother and fetus. The present study was carried out to evaluate the Role of *Ela, Chavya, Chitrak nasya* on abnormal uterine contraction present during 1st stage of labour. As abnormal uterine contraction can be hypotonic or hypertonic, so randomly 20 patients of hypotonic and 30 patients of hypertonic uterine contraction (i.e. total 50 patients) were registered after fulfilling the selection criteria. Three pinches of fresh powder taken and *Pottali* was made and its inhalation was given during inter-contraction period for 2 hours. Progress of labour was assessed with per-vaginum examination, partogram and cardiotocography recorded hourly. Significant early progress of labour and regularization of the uterine contraction were obtained in the patients of hypotonic uterine contraction.

Keywords:

Abnormal uterine contraction, *Nasya, Ela, Chavya, Chitrak Churna,* Cardiotocography, First stage of labour, Partogram.

INTRODUCTION

Ayurvedic classics explain the definition of normal labour as under the heading of *Prakruti* (Normalcy). Acharya *Vagbhata* describes that during proper *Kala* (at the onset of labour) the head of the fetus gets turned (*Avakshira*) and comes forward due to the action of *Prasutimaruta* (*Apana Vayu),* getting expelled through *Apathyapath* (Vagina), and thereafter detachment of placenta. [1] This is normal course of labour and other situations are abnormal.

Aavi (Labour pain) is the specialised type of pain responsible for *Garbhanishkrama* (Expulsion of fetus). [2] *Aavi* is started in *Aasannaprasava (*During first stage of labour). Intensity, frequency & duration of *Aavi* increases as labour progresses. Frequency and intensity of *Aavi* and expulsion of fetus all these are due to mutual co-operation of both *Apana* and *Vyana Vayu*. [3] *Vyana Vayu* causes contraction and relaxation of uterus while *Apana Vayu* helps in expulsion of fetus.

If the function of both the *Vayus* alters, the *Aavi* becomes exaggerated or diminished or irregular causing delayed labour V*ilambit Prasava*). *Vilambita Prasava* condition can be correlated with abnormal uterine contraction resulting in delayed labour. If the *Aavis* are delayed the fetus is troubled. Any deviation of normal patterns of uterine contraction affecting the course of labour is designated as disordered or abnormal uterine contraction. Abnormal uterine contraction can be hypotonic or hypertonic in nature. [4]

In hypotonic uterine contraction there is diminished intensity, shortened duration, increased interval, intrauterine pressure (IUP) < 25mm Hg, normal polarity maintained and good relaxation in between contraction, While in hypertonic uterine contraction there is basal tone of IUP > 20mm Hg, contractions are inco-ordinated (Loss of polarity) and inadequate relaxation in between contractions. [5]

Ayurveda has given the treatment for *Vilambita Prasava* like *Yonidhupana* (Vaginal fumigation), *Lepana* (Annoinment), *Nasya* (Nasal instillation of medicine), etc. Combination of the drug is used in the form *Nasya* as mentioned in *Charak samhita*, that it is effective in delayed labour due to abnormality of uterine contractions and helps in descending the fetus downwards. [6]

As the labour is accomplished by *Vayu*, so the drug selected for the study normalizes *Vata* and hence it was thought that it may regularize uterine contraction thus helping in establishing normalcy in delayed labour cases with reduction in anxiety and stress.

Hence, an attempt has been made to evaluate the effect of *Ela (Elettaria cardamomum maton.*), *Cavya* (*Piper retrofractum vahl*.), *Citraka* (*Plumbago zeylanica linn*.) *nasya* on abnormal uterine contraction present during the first stage of labour, and to study its mechanism of action & adverse effect.

Material and methods

The patients selected for this study were amongst women admitted in Prasuti Tantra labour room, S.S hospital B.H.U, fulfilling the criteria for selection were incorporated in the study.

Inclusion Criteria

- Parity- (0-4),
- Age (18-35yrs),
- Gestational age (36-40 wks) with vertex presentation,
- No history of induction of labour and LSCS,
- Abnormal uterine contractions (hypotonic/hypertonic) during 1st stage of labour were registered for the study.

Exclusion Criteria

- Parity- > 5
- Age(<18yrs>35yrs)
- Short stature (height < 5 ft)
- Gestational age (<36->40 wks) with malpresentation
- Anatomic pelvic abnormality
- Having heart disease/DM/TB/HTN/renal disease
- Admitted in labour room in advanced 1st stage and 2nd stage of labour,
- Reason for elective LSCS other than FPOL,
- Normal uterine contractions during the 1st stage of labour were excluded from the study.

A total registered 50 patients (30 – hypertonic (i.e. decreased interval, increased in duration & IUP > 50mmHg, Basal tone- >20mmHg), 20- hypotonic (i.e. interval increased, duration decreased & IUP < 25mmHg)) uterine contraction were subjected to detailed clinical history and physical examination, then 1st stage of labour was fixed and if there were abnormal uterine contraction the trial drug was given after obtaining the consent of patient.

These drugs (*Ela* seeds, *Chavya* root and *Chitrak* root) in raw form were obtained from the market of varanasi which were identified and evaluated for their quality and purity by experts at Ayurvedic pharmacy BHU.Powder forms of all the three herbs were prepared in the pharmacy .

Treatment protocol

Powder of the herbs must be fresh and in the form of fine particle (mesh value > 100), three pinches (i.e.1gm) of drug were taken in sterile double gauze piece and pottali was made, **(Figure 1: Ela, Chavya, Chitrak , Figure 2: Ela,Chavya,Chitrak powder and pottali)** and *Nasya* was given in the patients having abnormal uterine contraction(hypo/ hypertonic) during 1st stage of labour, frequently in between contraction for 2 hours. Frequency of administration were varies according to parity and as per latent or active phase of first stage of labour and on average 8 - 10 sittings of *Nasya* required for getting a good response.

Progress of labour was assessed with per vaginum examination partogram and cardiotocography (CTG) recorded hourly.**(Figure 3: Cardiotocography monitoring during labour).**

There were 44 patients out of 50 in latent phase of1st stage of labour(i.e. cervical dilatation < 3cm) and remaining 6 patients were in active phase of 1st stage of labour (i.e. cervical dilatation > 3cm). The cervical dilatation, cervical effacement and position of fetal head and uterine contraction as plotted on partogram were taken for progress of labour.

Figure 1: Ela, Chavya, Chitrak ,

Figure 2: Ela,Chavya,Chitrak powder and pottali

Figure 3:

CRITERIA FOR ASSESSMENT

Subjective criteria: Pain intensity.

Objective criteria: Assessment was made on changes in intrauterine pressure (IUP) 1 and 2 hours after inhalation as evident by CTG and also with the help of progress of labour i.e. cervical dilatation, cervical effacement and position of fetal head and uterine contraction as plotted on partogram were taken for assessment.

Statistical analysis

The obtained data on the basis of observation was subject to Statistical analysis. Repeated measure ANOVA (analysis of variants) test and paired t test were applied.

Observations and results

In the present study mean age of expectant mothers were 22-28 years, the mean height were 159.5cm and weight 57.38kg, mean Hb% were 10.46gm% while mean gestational age were 270.46 days.Primipara and multipara patients were registered equally i.e. 50%.Majority of patients (60%) belonged to middle class and 94% were housewives.

Dasavidha pariksha revealed that 82% of patients were kaphavata deha prakriti, madhyam sara(74%), madhyam samhanana(66%), madhyam satmya(48%) and pravar satva(38%) followed by madhyam satva, avar aaharshakti(48%) and avar vyayamshakti(43%).

In the latent phase of1st stage of labour out of 44 patients 75% of the patients had progress of labour and 25% of the patients failed to progress. In active phase of1st stage of labour all the 6 patients, i.e.100% had showed progress of labour. Majority (64%) of the patients delivered through spontaneous vaginal delivery.

In hypotonic uterine contraction 75% of patients delivered vaginally, while in hypertonic 57% of patients delivered vaginally.

Notification of complications

88% of patients had no adverse effect during 1st stage of labour. Vomiting was seen in 8% cases while flushing and nausea were observed only in one case.

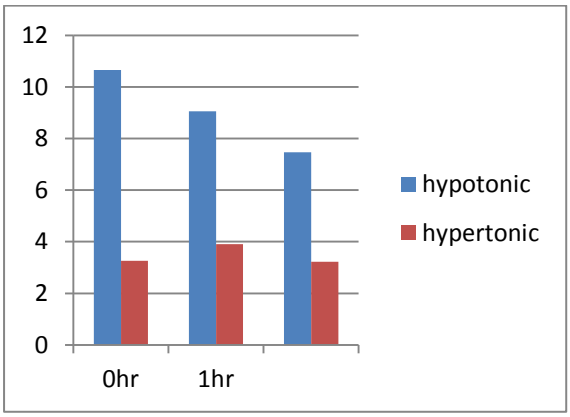
In 98% of patients foetal heart rate (FHR) was maintained within normal limit. Abnormal FHR observed only in 2% of cases. Incidence of meconium stained amniotic fluid and caput formation were observed only in 2% of cases. Intrauterine foetal movement was normal in 94% of patients which sustained throughout the labour process.

Table 1: Profile of hypotonic and hypertonic contraction in hourly natal observation

S. NO.	VARIABLE	TRIAL (n=20) HYPOTONIC			TRIAL (n=30) HYPERTONIC		
		INITIAL	1ST HR	2ND HR	INITIAL	1ST HR	2ND HR
1.	Interval						
	Mean± SD	10.65 ± 8.02	9.05± 7.33	7.47 ± 6.99	3.26 ± 2.51	3.91± 4.29	3.23 ± 1.69
2.	Duration						
	Mean± SD	28.25 ± 9.77	30.75 ± 11.27	36.25 ± 13.75	38.83 ± 12.08	37.83 ± 10.05	38.50 ± 12.94
3.	IUP						
	Mean± SD	38.50 ± 12.25	45.10 ± 14.60	60.75 ± 26.12	68.50 ± 26.03	59.50 ± 17.28	63.00 ± 23.06

Table 2: Profile of hourly comparison of hypotonic and hypertonic contraction

S. NO.	VARIABLE	TRIAL(n=20) HYPOTONIC			TRIAL (n=30) HYPERTONIC		
		INITIAL	1ST HR	2ND HR	INITIAL	1ST HR	2ND HR
1	Interval						
	Paired `t` test	5.14	2.83	3.88	0.79	0.88	0.08
	`p` value	0.00(HS)	0.01(HS)	0.00(HS)	0.43(NS)	0.38(NS)	0.93(NS)
2	Duration						
	Paired `t` test	1.56	4.59	3.76	1.00	0.52	0.20
	`p` value	0.13(NS)	0.00(HS)	0.00(HS)	0.32(NS)	0.60(NS)	0.83(NS)
3	IUP						
	Paired `t` test	3.06	3.85	3.86	3.43	1.48	1.27
	`p` value	0.00(HS)	0.00(HS)	0.00(HS)	0.00(HS)	0.14(NS)	0.21(NS)



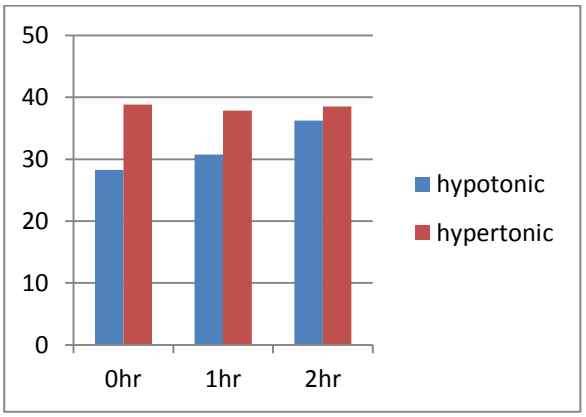


Figure 4: Hourly comparison of interval contraction in minutes.

Figure 5: Hourly comparison of duration of contraction in seconds.

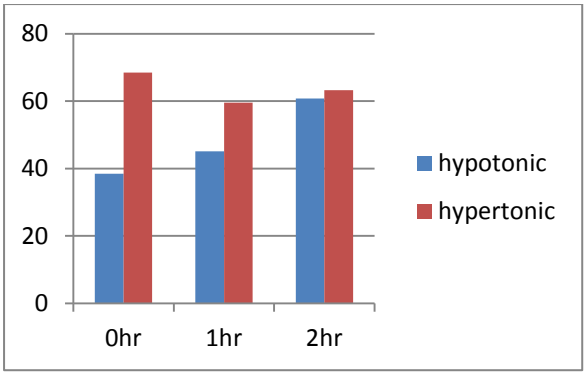


Figure 6: Hourly comparison of intrauterine pressure of contraction in mmHg

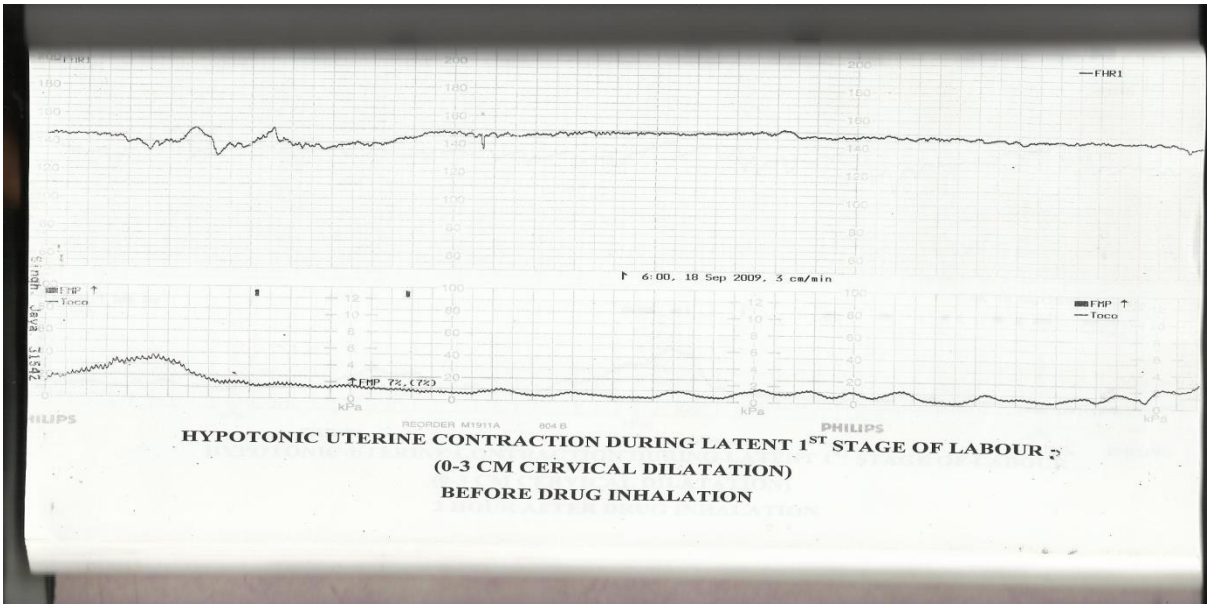


Figure 7: Cardiotocography before drug inhalation

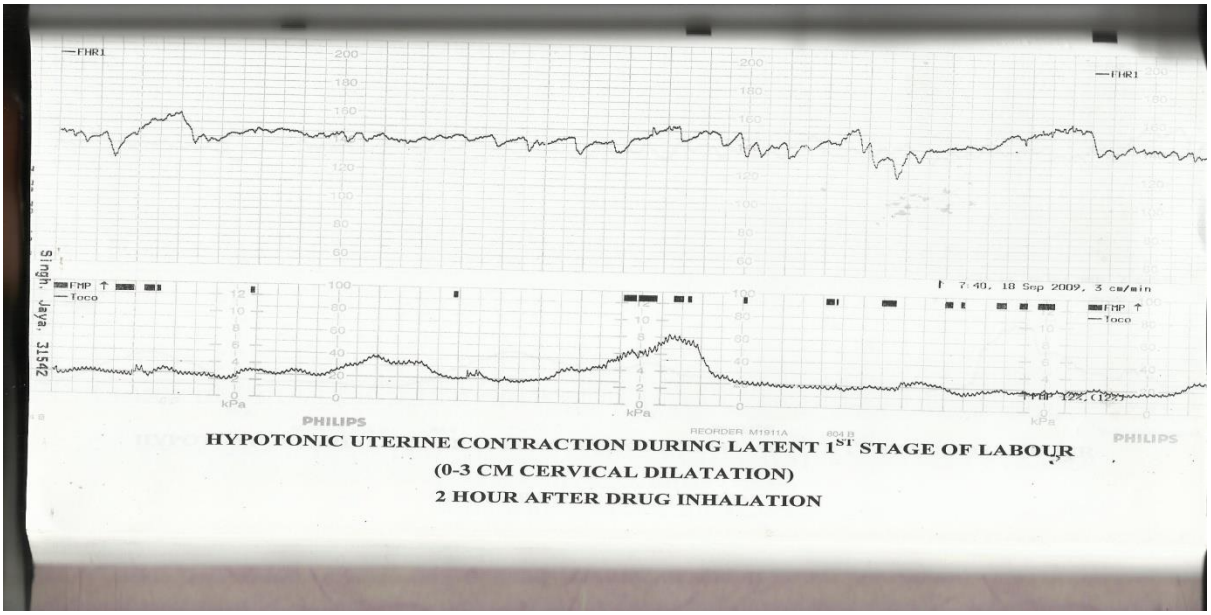


Figure 8: Cardiotocography 2 hours after drug inhalation

DISCUSSION

Effect on hypotonic uterine contraction-

Highly significant changes were observed during trial period in interval, duration, and IUP. The duration (> 5 seconds) and IUP (>10mmHg) of contraction were increased while interval (> 1 minute) of contraction is decreased. Good progress of labour was seen among these patients.

Effect on hypertonic uterine contraction-

Non-significant changes were observed during trial period in interval, duration and intrauterine pressure of hypertonic uterine contraction. Changes are observed in the parameter (i.e. in interval (<10 seconds) increased, duration (< 2seconds) decreased and intrauterine pressure (>6mmHg) decreased) after 2 hours. There were higher incidences of caesarean section in the patients of hypertonic uterine contraction (Table: 1 to 2 & figure: 4 to 6). It is difficult to clarify here that the resultant on progress of labour was due to their individual or combined response of the compound drug.

Probable mode of action of the drug

AYURVEDIC VIEW:

Ela and *Chavya* helps by means of guna. *Citrak* has direct action on *Garbhashaya* (Uterus).Due to *Sukshma Strotogami* Guna stimulates all *Indriya, Gyanendriya* holds *Karmendriya. Garbhashaya* is *Karmendriya* so due to *Anuloman Kriya*, it results in *Garbhanishkraman*. Delay in labour due to *Sthool Guna* i.e. *Viguna Apana*, Contrast of *Sthool* is *Sukshma*, resulting in *Prasava.*

Due to properties of this *Dravyas* it stimulates both *Vyana* and *Apana vayu,* so along with contraction and relaxation of uterus (*Karma of Vyana*) and *Anuloman Kriya (Karma of Apana*), it resulting in *Garbhanishkraman.*

The process of labour is mainly controlled by the *Vata dosha*. The drugs used for the trial having kaphavatahar property, *laghu, ushna, sukshma and tikshna guna.* [7] The drug with the help of their gunas (*ushna,tikshna sukshma and laghu)* regulates *Prana Vayu* which in turn regulates the all *Indriya* and *Vyana* and *Apana vayu,* due to this regulation of *Aavi* occurs.

Nasal route of drug administration (Nasya):

Nasya is important therapeutic measure which acts on the site of *Prana vayu* which in turn regulates the V*yana and Apana Vayu*. [8] Vyana vayu which is responsible for the contraction and relaxation in the body and apana vayu which is responsible for the prasava are well controlled by nasya.

MODERN VIEW:

The regular and forceful uterine contraction are may be brought about by one of the content of the trial drug compound i.e. Citrak due to presence of plumbagin alkaloid, which stimulates the contraction of smooth muscle and may act on the upper part of the uterus in hypotonic uterine contraction. [9] Cervical changes (dilatation and effacement) may be brought about by the smooth muscle relaxant effect of Ela(due to presence of flavanoids geraniol, myrcene)[10] , and Cavya(due to presence of piperine alkaloid) mediated through blockade of calcium channel (inhibit the calcium influx) which may be acting on lower uterine segment. [11] While descent of the head may be due to the combined effect of the drug which maintains the co-ordination between fundal contraction (*Citrak*) and cervical dilatation (*Ela, Cavya)*, thus help in advancement of presenting part. [12]

The drugs which are used are volatile and lipid soluble, thus ideal for the nasal route drug administration. The drug thus administered is absorbed and reaches the cranial cavity and systemic circulation and it is also captured by the olfactory nerve which is conducted to amygdaloid nucleus, pyriform area and prefrontal cortex. This stimulation from olfactory

bulb stimulates the limbic system and hypothalamus. Hypothalamus which is the regulator of oxytocin may have role in the drug action.

CONCLUSION

Trial Ayurvedic drug compound (*Ela, Cavya, Citrak)* has not shown any adverse effect on mother and fetus. The trial drug has been found clinically effective in hypotonic uterine contraction during the 1st stage of labour. Significant early progress of labour and regularization of the interval, duration and intrauterine pressure of uterine contraction in trial group suggest a good clinical response in the patients of hypotonic uterine contraction. It is not effective in hypertonic uterine contraction.

The probable action of the drug may be due to its *vatakaphahar* property and *laghu, ushna, tikshna* and *sukshma guna*. .

By virtue of smooth muscle relaxant action of *Ela* and *Cavya* (inhibition of calcium influx) and smooth muscle contraction action of *Citrak*, the drug may be beneficial in progress of labour and normalization of uterine contraction.

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