Research Article

AYURVEDIC PERSPECTIVE OF IMPACT OF ‘PRAKRITI’ (BODY CONSTITUTION) ON PREGNANCY AND LABOUR

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ABSTRACT

An observational clinical study was conducted to develop an authentic approach regarding effect of “Dosha - Prakriti” (Humoral Constitution) on physiology of labour and to evaluate the physiological changes occurring during pregnancy on the basis of Prakriti (Constitution). A convenient sample of 50 pregnant females of age group 20-45 years, were selected after an informed written consent with ≥ 34 weeks of pregnancy. The study was conducted at OPD of Dept. of Sri Roga evam Prasati Tantra of Ayurvedic and Unani Tibbia College Hospital, Karol Bagh, New Delhi (Govt. of Delhi), India. 10 non-pregnant females (5 married and 5 unmarried) as control were enrolled in this study. The registered patients were categorized into 4 groups according to their Prakriti on basis of predominant dosha viz. Vataja, Pittaja, Kaphaja and Sama and 2 sub groups of Primigravida and Second/Multigravida. Routine investigations of the patients were conducted in the central laboratory of the hospital. The study revealed that in Vataja Prakriti females, progress of labour was good with strong labour pains in frequency and moderate labour process. Pittaja Prakriti Females exhibited more disturbed LFT during pregnancy and normal progress of labour during 1st stage of labour with moderate intensity and frequency of labour pains resulting in moderate labour process. Kaphaja Prakriti Females showed longest Period of Gestation (280-290 days) with more affected lipid profile during their pregnancy. At the time of labour, weak labour pains were observed in intensity as well as in frequency causing longer duration (22.27 hours) of 1st stage of labour causing difficult and prolonged labour was also noticed. In Sama Prakriti Females, good progress of labour was observed leading to moderate labour process.

Keywords: Prakriti, Prasuti, Apana Vayu, Body Constitution, Vataja, Pittaja, Kaphaja, Sama.

INTRODUCTION

Institutional delivery is the cornerstone of safe motherhood. “Safe Motherhood” is the aim of MCH (Maternal and Child Health Care Programme)\(^1\), which has been considered for this research study. Safe Motherhood\(^2\) comprises of Safe Pregnancy, Safe Labour and finally Safe Puerperal Period. Ayurvedic Scholars have mentioned the factors for safe motherhood and have explained how the safe pregnancy leads to safe and easy labour process. Besides this they have given the unique concept of Prakriti\(^3\). It is well known that certain psychosomatic changes take place during pregnancy and labour. These are physiological processes and so due to different Prakriti it is but obvious that all females do not have the similar experiences during their pregnancy and labour. As per Ayurveda if we know the Prakriti of a particular female we may presume her entire pregnancy and parturition period at the beginning of pregnancy. But this would be possible only if scientifically the relation between Prakriti with Pregnancy and Labour could be proved. The present research study has been done to find out any such relationship of Prakriti with the Physiological Processes like Pregnancy and Labour. Moreover to prove whether labour process will be complicated or easier for a female of particular Prakriti. The aim of this study was to reveal the inter-relation of by-birth formed Prakriti\(^4\) (genetically present) with the major phenomenon of reproduction of human species i.e. Pregnancy and Labour and thereby helpful in the management of labour. The objective for this study was to promote the concept of Easy Labour (Sukha Prasav) in females of different “Prakriti”, without unnecessary medical intervention.

MATERIAL AND METHODS

A convenient sample size of 50 patients was selected after an informed written consent. The present study was carried out in the attached hospital of Ayurvedic and Unani Tibbia College, situated at Karol Bagh, New Delhi, India. A total of 50 patients with ≥ 34 weeks of pregnancy (primigravida, pregnant for the first time /multigravida, 2nd or above that pregnancy, between the ages of 20–35 years) were enrolled between May 2004 and January 2005, having Vataja, Pittaja, Kaphaja and Sama Prakriti. Prakriti analysis (Table 1) was done on basis of Proforma prepared from the features’ mentioned in the Ayurvedic literature. Follow up was done weekly till their delivery at the hospital to observe the labour process and up to 3-4 days of postpartum. The comparative analysis of two groups was regarding routine blood investigations and biochemical tests for physiological difference was done using T-Test for equality of Means and Two-Sample Kolmogorov-Smirnov Test. The Prakriti and symptoms of pregnancy (rating scale ’0’- absent, 1-mild, 2 moderate)
were correlated using Kruskal-Wallis Test and Chi-Square ($\chi^2$) Test. The routine hematological and biochemical investigations (done at the time of 34 weeks of pregnancy and at the time of labour) for physiological variation in both the conditions were done using Paired T-Test. The influence of Prakriti on Labour (Type of labour, Labour Progress, Labour Pains, Duration of labour etc.) was evaluated by Kruskal-Wallis Test (and Chi-Square Test. The level of significance in all the above mentioned test-statistics was considered as 1% (Highly significant), 5% (Significant), 10% (Just Significant) and above that Not significant.

RESULTS
The observation of the selected sample of patients and statistical analysis of the data revealed following results:- The parameters assessed for the Labour Process (Table 4):

Labour Progress based on Bishop’s score $^6$ (Table 2) depends on the Prakriti (p = .004)* Duration of 1st stage of labour also varies with Prakriti (p = .003) and results revealed longer duration in Kaphaja Prakriti females.

Type of Labour $^7$ is also influenced by the Prakriti (p = .012). Type of Labour is meant for the procedure of labour process conducted (easy, moderate, difficult and prolonged) on the basis of Power, Passage and Passenger concept playing their role in labour process. Labour pains (Table 3) occur because of uterine contractions. The duration and intensity of Labour pains $^{8,14}$ vary in all females and they have relation with Prakriti of the female at the time of Labour (p = .082). Vataja Prakriti females exhibited labour pains of high frequency and moderate intensity. Pittaja Prakriti females have high intensity and high frequency labour pains. While Kaphaja Prakriti females show labour pains of lower intensity and lower frequency.

### The hematological parameters and biochemical parameters

#### Table 5 Assessment

<table>
<thead>
<tr>
<th>Total Leukocyte Count</th>
<th>t = -3.962 and p-value = .000</th>
<th>Alkaline Phosphatase</th>
<th>t = -7.048 and p-value = .000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum Uric acid</td>
<td>t = -6.644 and p-value = .000</td>
<td>Serum Cholesterol</td>
<td>t = -7.948 and p-value = .000</td>
</tr>
<tr>
<td>LDL</td>
<td>t = -5.182 and p-value = .000</td>
<td>Triglycerides</td>
<td>t = +7.967 and p-value = .000</td>
</tr>
<tr>
<td>Mean blood pressure</td>
<td>t = -7.624 and p-value = .000</td>
<td>Pulse Rate</td>
<td>t = -4.294 and p-value = .000</td>
</tr>
<tr>
<td>Respiration Rate</td>
<td>t = -9.168 and p-value = .000</td>
<td>HDL</td>
<td>t = -2.225 and p-value = .031</td>
</tr>
</tbody>
</table>

#### Table 1: Prakriti Assessment

<table>
<thead>
<tr>
<th>Features</th>
<th>Vata</th>
<th>Pitta</th>
<th>Kapha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Structure</td>
<td>Tall, thin, poorly developed physique</td>
<td>Medium height, moderately developed physique</td>
<td>Short, stout, big, well-developed physique</td>
</tr>
<tr>
<td>Weight</td>
<td>Low, prominent bones</td>
<td>Moderate, good muscles</td>
<td>Heavy, tends towards Obesity</td>
</tr>
<tr>
<td>Complexion</td>
<td>Dull, brown, darkish</td>
<td>Red, flushed, shiny</td>
<td>White, pale, soft</td>
</tr>
<tr>
<td>Skin</td>
<td>Thin, dry, cold, cracked, prominent veins</td>
<td>Warm, moist, pink with moles, freckles, acne</td>
<td>Thick, white, moist, cold, soft, smooth</td>
</tr>
<tr>
<td>Hair</td>
<td>Scanty, coarse, dry (rough) brown, wavy</td>
<td>Less, fine, soft, reddish, early greying, baldness</td>
<td>Abundant, oily, thick, wavy, lustrous</td>
</tr>
<tr>
<td>Eyes</td>
<td>Small, dry, dull, unsteady</td>
<td>Medium, thin, red (inflamed easily), green, piercing</td>
<td>Wide, prominent, thick, white, Attractive</td>
</tr>
<tr>
<td>Nose Lips</td>
<td>Thinner, small, dry, crooked, Unsteady</td>
<td>Medium, medium, soft, red</td>
<td>Thick, big, firm, oily</td>
</tr>
<tr>
<td>Teeth and Gums</td>
<td>Thin, dry, small, rough, crooked, receding gums</td>
<td>Medium, soft, pink, gums bleed easily</td>
<td>Large, thick, soft, oily, smooth</td>
</tr>
<tr>
<td>Shoulders</td>
<td>Thin, small, flat</td>
<td>Medium</td>
<td>Broad, thick, firm</td>
</tr>
<tr>
<td>Chest</td>
<td>Thin, small, narrow, poorly developed</td>
<td>Medium</td>
<td>Broad, large, well or overly shaped</td>
</tr>
<tr>
<td>Hands</td>
<td>Small, thin, dry, cold, rough, unsteady (movements)</td>
<td>Medium, warm, reddish</td>
<td>Large, thick, cool, firm</td>
</tr>
<tr>
<td>Feet</td>
<td>Small, thin, dry, rough, fissured Unsteady</td>
<td>Medium, soft, red</td>
<td>Large, thick, hard, firm</td>
</tr>
<tr>
<td>Joints</td>
<td>Small, dry, unsteady, cracking</td>
<td>Medium, soft, loose</td>
<td>Large, thick, well built</td>
</tr>
<tr>
<td>Nails</td>
<td>Small, thin, dry, dark, darkish</td>
<td>Medium, soft, reddish</td>
<td>Large, thick, smooth, white, firm, oily</td>
</tr>
<tr>
<td>Urine</td>
<td>Scanty, difficult, colorless</td>
<td>Profuse, yellow, red burning</td>
<td>Moderate, whithis, milky</td>
</tr>
<tr>
<td>Faeces</td>
<td>Scanty, dry, hard, difficult, painful, gas, tends towards constipation</td>
<td>Abundant, tends towards diarrhoea, burning sensation</td>
<td>Moderate, solid, mucous in stool</td>
</tr>
<tr>
<td>Sweat</td>
<td>Scanty, no smell</td>
<td>Profuse, hot, strong smell</td>
<td>Moderate, cold, pleasant smell</td>
</tr>
<tr>
<td>Appetite</td>
<td>Variable, erratic</td>
<td>Strong, sharp</td>
<td>Constant, low</td>
</tr>
<tr>
<td>Voice</td>
<td>Low, weak, hoarse</td>
<td>High pitch, sharp</td>
<td>Pleasant, deep, good tone</td>
</tr>
<tr>
<td>Speech</td>
<td>Quick, inconsistent, erratic, Talkative</td>
<td>Moderate, convincing, argumentative</td>
<td>Slow, definite, less talking</td>
</tr>
<tr>
<td>Mental status</td>
<td>Quick, adaptable</td>
<td>Intelligent, penetrating</td>
<td>Slow steady, dull</td>
</tr>
<tr>
<td>Nature</td>
<td>Indecisive</td>
<td>Critical, short tempered</td>
<td>Lazy, slow in activity</td>
</tr>
<tr>
<td>Memory</td>
<td>Poor, notices things easily but forgets</td>
<td>Sharp, clear</td>
<td>Slow to take notice but will not forget</td>
</tr>
</tbody>
</table>
Emotional

Fea

rful, anxious, nervous

Angry, Irritable, contentious

Calm, content, attached, very

Emotional
tendencies

Faith

Erratic, changeable, rebel

Determined, fanatic, leader

Constant, loyal, conservative

Sleep

Light, tends towards insomnia

Moderate, may wake up but

Heavy, difficulty in waking up

Dreams

Flying, moving, restless, clouds,

Colorful, passionate, conflict,

Romantic, sentimental, white,

Habits

Likes moving, travelling, parks,

Likes sports, politics, painting,

Likes water, sailing, flowers,

Activity

Quick, fast, unsteady, erratic,

Medium, intolerant of heat,

Sluggish, stately, steady but

Strength

Low, poor endurance, starts and

Medium, powerful in action,

Strong, good endurance but

Sexual

Variable, erratic, deviant, strong

Moderate, passionate,

Low but constant sexual desire

nature

Desire but low energy, few

Dominating, good sexual energy, devoted,

Children

many children

Sensitivity

Fear of cold, wind, sensitive to

dryness

Fear of heat, dislike of sun, fire

Fear of cold, damp, likes wind

and sun

Resistance
to
disease

Poor, variable, weak immune

system

Medium, prone to infections

Good, consistent, strong

immune system

Reaction
to
medications

Quick, low dosage needed,

unexpected side effects or

nervous reactions

Medium, sensitive to drugs like aspirin

Slow, high dosage required,

effects slow to manifest

Pulse /

Naadi

Threaded, rapid, irregular, weak

like snake, crow

Wiry, bounding, moderate like

a frog, leech

Deep, slow steady, rolling,

slippery like a swan

Interactions

Gets friendly very fast, but

quarrels easily

Limited friends, steady in

relationships

Having less friends, relations

are maintained for long

Food

Sweet, sour, salt, oily, hot

Sweet, astringent, bitter, cold

Bitter, astringent pungent, hot,

rough, less

Face

expressions

Blank face

Aggressive, angry

Smiling face

Table 2: Bishop’s Score for Labour Progress Assessment

<table>
<thead>
<tr>
<th>Factors</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervix</td>
<td></td>
</tr>
<tr>
<td>Dilatation (cm)</td>
<td>0</td>
</tr>
<tr>
<td>Effacement (%)</td>
<td>0-30</td>
</tr>
<tr>
<td>Consistency</td>
<td>Firm</td>
</tr>
<tr>
<td>Position</td>
<td>Posterior</td>
</tr>
<tr>
<td>Vertex Station</td>
<td>-3</td>
</tr>
</tbody>
</table>

Total Score: 13; Favorable Score: 6-13; Unfavorable Score: 0-5

Table 3: Assessment of Labour Pains

<table>
<thead>
<tr>
<th>1st Stage of Labour Duration/Interval</th>
<th>2nd Stage of Labour Duration/Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weak</td>
<td>10-15 s / 8-10 mt</td>
</tr>
<tr>
<td>Moderate</td>
<td>&lt; 10-15 s / &gt; 8-10 mt</td>
</tr>
<tr>
<td>Strong</td>
<td>&gt; 10-15 s / &lt; 8 mt</td>
</tr>
</tbody>
</table>

Table 4: Labour Assessment with Prakriti as Variable

<table>
<thead>
<tr>
<th>Factors</th>
<th>Chi-Square</th>
<th>df</th>
<th>Asymp. Sig. (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labour progress (bishop score)</td>
<td>13.367</td>
<td>3</td>
<td>.004</td>
</tr>
<tr>
<td>Labour pains</td>
<td>6.709</td>
<td>3</td>
<td>.082</td>
</tr>
<tr>
<td>Period of gestation</td>
<td>.403</td>
<td>3</td>
<td>.940</td>
</tr>
<tr>
<td>Duration - stage 1</td>
<td>14.210</td>
<td>3</td>
<td>.003</td>
</tr>
<tr>
<td>Duration - stage 2</td>
<td>1.718</td>
<td>3</td>
<td>.633</td>
</tr>
<tr>
<td>Duration - stage 3</td>
<td>3.475</td>
<td>3</td>
<td>.242</td>
</tr>
<tr>
<td>Type of labour</td>
<td>10.936</td>
<td>3</td>
<td>.012</td>
</tr>
</tbody>
</table>

Grouping Variable: Prakriti
The longest period of gestation (280-290 days) was present in Kaphaja Prakriti. It means that ‘Sthira guna’ or static quality of the Kapha may increase the stay of foetus in uterus. The LFT (Liver Function Test) parameters’ level was found higher in Pittaja Prakriti during pregnancy as well as during labour. Most enzymes exhibit functions like that of Pitta, therefore Liver function were affected more in Pittaja Prakriti females. In fact serum Alkaline Phosphatase almost becomes double during pregnancy as well as during labour and is the functional site of many enzymes for digestion). So, they enable the performance of work required for bearing down efforts in response to uterine contractions during labour. Moreover the metabolism of sweet and oily food is mainly carbohydrates and fats respectively. Many of the parameters considered for the study were found to be influenced by the Prakriti of the patients. The ‘Slow progress of labour’ was observed in most of the Kaphaja Prakriti females. ‘Moderate / Normal progress of labour’ was observed in females of Pittaja Prakriti. ‘Good progress of labour’ was observed maximum in Sama Prakriti and thereafter in Vataja Prakriti. The action of Prasuti Maruta (a specific term given in Ayurveda for denoting Nervine action during labour) and vitiation of which may cause the obstructed or delayed labour. So, because of the same property of the nervous action of Prasuti Maruta in Vataja Prakriti the labour was conducted normally and its progress was good throughout the process. But in Kaphaja Prakriti which is just opposite to vataja (as per Ayurveda); the progress of labour was found slow, which might be due to the opposite property. In Kaphaja Prakriti the descent of the foetus is slow. It is probably due to the static quality of kapha causing static activity and thus cervical dilatation is impaired. Initiation of Labour occurs with the “X-Factor” which causes the foetal distress thus activation of foetal Hypothalamo-pituitary adrenal axis. This “X-Factor” or unknown factor can be called as “Garbhavasa- Vairagyata” (Foetus’s desire to stop staying in uterus (as told by Sushrut, an Ayurvedic Scholar) which influences the foetus to leave uterus. The probable cause of this feeling of foetus is the “Saadhak Pitta” (Hormone fulfilling the desire of a person) situated in foetal brain. The desire of the foetus to come out of the uterus causes the hypothalamus (Saadhak Pitta activation) to release Cortisol, which affects Placenta (Apara) to release local prostaglandins due to altered Oestrogen-Progesterone ratio. As per Haarita (a scholar of Ayurveda) “Naadi- Vibandha Mukti” (Separation from Cord) factor refers to the placental release of local Prostaglandins (PGE2 and PGF2β). Simultaneously, naturally (Swabhava i.e. naturally and “Kala Parkarshi” i.e. completion of 9 months stay in uterus (as told by Sushrut, the Ayurvedic Scholar)) and “Garbhasampurnata” (as told by Bhela, an Ayurvedic Scholar); the mother’s posterior pituitary secretes Oxytocin and parturition begins by the activation of myometrial contractions. Thus there is a stretch of foetal head on cervix and pelvic floor muscles due to myometrial contractions. This causes a +ve feedback arc (Ferguson’s Reflex) to secrete more Oxytocin in response to trigger mechanism add by tissue microscopic receptors (the contractile response is stimulated through α-receptors of post-ganglionic nerve fibre in and around cervix and lower part of uterus) and as a result more uterine contractions occur along with urge to bear down.

DISCUSSION

The longest period of gestation (280-290 days) was present in Kaphaja Prakriti. It means that ‘Sthira guna’ or static quality of the Kapha may increase the stay of foetus in uterus. The LFT (Liver Function Test) parameters’ level was found higher in Pittaja Prakriti during pregnancy as well as during labour. Most enzymes exhibit functions like that of Pitta, therefore Liver function were affected more in Pittaja Prakriti females. In fact serum Alkaline Phosphatase almost becomes double during pregnancy but much of the increase is attributable to heat stable placental alkaline phosphatase isoenzymes. There is further increase in its level till labour takes place and then decreases only after placenta is expelled. The level of Alkaline Phosphatase was found higher in Pittaja Prakriti females during pregnancy and labour. Because the main organ involved in the metabolism is ‘yakrita’ (liver) as per Ayurveda. It is also the functional site of Bhuttagni (many enzymes for digestion) at macro level. So, it is obvious that Pittaja Prakriti females may have higher level of Alkaline Phosphatase. Serum Cholesterol and LDL level was found higher in females of Kaphaja Prakriti during pregnancy and labour. As the Kaphaja Prakriti females consume more sweet and oily food. These substances are predominantly rich in high caloric energy providing substances. So, they enable the performance of work pertaining especially to muscle as required for bearing down efforts in response to uterine contractions during labour. Moreover the metabolism of sweet and oily food is mainly carbohydrates and fats respectively. Many of the parameters considered for the study were found to be influenced by the Prakriti of the patients. The ‘Slow progress of labour’ was observed in most of the Kaphaja Prakriti females. ‘Moderate / Normal progress of labour’ was observed in females of Pittaja Prakriti. ‘Good progress of labour’ was observed maximum in Sama Prakriti and thereafter in Vataja Prakriti. The action of Prasuti Maruta (a specific term given in Ayurveda for denoting Nervine action during labour) and vitiation of which may cause the obstructed or delayed labour. So, because of the same property of the nervous action of Prasuti Maruta in Vataja Prakriti the labour was conducted normally and its progress was good throughout the process. But in Kaphaja Prakriti which is just opposite to vataja (as per Ayurveda); the progress of labour was found slow, which might be due to the opposite property. In Kaphaja Prakriti the descent of the foetus is slow. It is probably due to the static quality of kapha causing static activity and thus cervical dilatation is impaired. Initiation of Labour occurs with the “X-Factor” which causes the foetal distress thus activation of foetal Hypothalamo-pituitary adrenal axis. This “X-Factor” or unknown factor can be called as “Garbhavasa- Vairagyata” (Foetus’s desire to stop staying in uterus (as told by Sushrut, an Ayurvedic Scholar) which influences the foetus to leave uterus. The probable cause of this feeling of foetus is the “Saadhak Pitta” (Hormone fulfilling the desire of a person) situated in foetal brain. The desire of the foetus to come out of the uterus causes the hypothalamus (Saadhak Pitta activation) to release Cortisol, which affects Placenta (Apara) to release local prostaglandins due to altered Oestrogen-Progesterone ratio. As per Haarita (a scholar of Ayurveda) “Naadi- Vibandha Mukti” (Separation from Cord) factor refers to the placental release of local Prostaglandins (PGE2 and PGF2β). Simultaneously, naturally (Swabhava i.e. naturally and “Kala Parkarshi” i.e. completion of 9 months stay in uterus (as told by Sushrut, the Ayurvedic Scholar)) and “Garbhasampurnata” (as told by Bhela, an Ayurvedic Scholar); the mother’s posterior pituitary secretes Oxytocin and parturition begins by the activation of myometrial contractions. Thus there is a stretch of foetal head on cervix and pelvic floor muscles due to myometrial contractions. This causes a +ve feedback arc (Ferguson’s Reflex) to secrete more Oxytocin in response to trigger mechanism add by tissue microscopic receptors (the contractile response is stimulated through α-receptors of post-ganglionic nerve fibre in and around cervix and lower part of uterus) and as a result more uterine contractions occur along with urge to bear down.
As per Ayurveda labour is said to be the function of Apaan Vayu (Nervous activity controlling expulsion of urine, faeces, menstrual blood, semen and foetus etc.) and Prasuti-Maruta\(^1\) may be considered as the Ferguson’s Reflex for parturition. More of the effect of Prasuti-Maruta, more will be the +ve feed back mechanism (due to Ferguson’s reflex) and thus stronger will be the uterine contractions. In this way the whole Labour process is completed.

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I owe extreme debt to administration and authorities of Ayurvedic and Unani Tibbia College and Hospital, Karol Bagh, New Delhi, India for their cooperation and extending helping hand in conducting the research in the OPD of Stri Roga and Prasuti Tantra Department of the hospital.

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