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MANAGEMENT OF OLIGOHYDRAMNIOS THROUGH AYURVEDA: A CASE REPORT

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ABSTRACT

The embryo and the fetus are surrounded by amniotic fluid during development in utero, and it has various functions. The normal range for Amniotic Fluid Index (AFI) is 8 to 24 cm, with values above and below this indicating polyhydramnios/hydramnios and oligohydramnios, respectively. Borderline oligohydramnios usually refers to AFIs between 5 to 8 cm. The primary function of amniotic fluid is to protect the fetus. The extremes of volume may be associated with increased risks for adverse pregnancy outcomes. Here, a primi gravida patient, with a Period of Gestation 37+5 weeks by LMP, came to the out-patient department (OPD) of *Prasuti tantra* OPD of All India Institute of Ayurveda, Delhi, on January 25th, 2023, for a routine antenatal checkup with ultrasonography report showing AFI= 7.1 cm. So, an effort was made to maintain the amniotic fluid volume using Ayurveda medicines (*Bala*, *Shatavari* and *Yashtimadhu*) orally in the form of *ksheerapana* that resulted in significant improvement in the amniotic fluid volume within a week, and the patient delivered a healthy baby vaginally with spontaneous labour pains at POG 40+2 weeks (by LMP). No sign of fetal distress was seen during labour. APGAR score was found normal.

Keywords: *Bala (Sida cordifolia), Ksheerapana,* Oligohydramnios, *Shatavari* (*Asparagus racemosus*), *Yashtimadhu (Glycyrrhiza glabra).*

INTRODUCTION

Amniotic fluid surrounds the embryo and fetus during development and has many functions. It creates a physical space for fetal movement, which is necessary for normal musculoskeletal development. It permits fetal swallowing, which is essential for gastrointestinal tract development, and fetal breathing, which is critical for lung development. Amniotic fluid guards against umbilical cord compression and protects the fetus from trauma. It even has bacteriostatic properties.[1] Amniotic fluid volume increases from approximately 30 ml at ten weeks to 200 ml by 16 weeks, reaching 800 ml by mid-third trimester.[2] The normal range for commonly used AFI is 8 to 24 cm, with values above and below this indicating hydramnios and oligohydramnios, respectively.[3] Borderline oligohydramnios usually refer to AFIs between 5 and 8 cm.[4] Amniotic fluid volume abnormalities may reflect a problem with fluid production or circulation. The volume extremes may be associated with increased risks for adverse pregnancy outcomes. When amniotic fluid volume is decreased in the late second or third trimester, it is more likely related to fetal growth restriction, a placental abnormality or a maternal complication such as preeclampsia or vascular disease.[5]

The symptoms of oligohydramnios, like decreased fetal movement, easily palpable but complex to ballot fetal parts per abdominally, can be related to *Manda Spandana* or *Aspandana* (~decreased or absent foetal movement), *Anunnatakukshita* or *Maturkukshi na purayanti* (~not as per gestational age) like symptoms of *Garbhashosha* (~foetal emaciation) and *Garbhakshaya* (~foetal growth restriction) described by *Acharya Sushruta. Acharya Sushruta* has mentioned the use of *Medhyanna* (~diet for improving cognitive functions) in the treatment of *Garbhakshaya* [6] and *Brimhaniya paya* (~milk for nourishment) in the treatment of *Garbhashosha.*[7] The use of *Medhya* (~nootropic) and *Brimhaniya* (~nourishing) *Ahara* (~diet) plays a vital role in reduced amniotic fluid. Effective medical therapy for oligohydramnios is essential for the foetus to grow normally without any distress in the near term and to deliver naturally. Thus, the present study uses *Shatavari, Bala* and *Yashtimadhu* as *Ksheerpaka*.

PATIENT INFORMATION

A 23-year-old primigravida patient, with a Period of Gestation 37+5 weeks by Last Menstrual Period and 36+6 weeks by first Ultrasound, married for two years and belonging to middle-class economic status, presented to the outpatient department (OPD) of *Prasuti Tantra* of All India Institute of Ayurveda, Delhi on January 25th, 2023 with ultrasonography report dated January 19th, 2023 containing single live intrauterine pregnancy with period of gestation 35+0 weeks and AFI= 7.1 cm with normal Doppler flow parameters. However, the pregnant woman didn't have any complaints. Her last menstrual period (LMP) was on May 8th, 2022, with the Expected delivery date (EDD) on February 14th, 2023. She had a history of regular menstrual cycles and was a K/C/O Hypothyroidism, taking Tab. Thyronorm 25mcg daily. The woman gave no significant surgical/ allergic /addiction/ family history, but a detailed history revealed that she had faulty dietary habits with decreased fluid intake. A need for effective therapy was felt to maintain the amniotic fluid level for the fetus to grow normally till delivery. The patient was advised to visit regularly for routine follow-up and to take an appropriate protein-rich diet and was also advised ultrasonography as a routine antenatal workup.

CLINICAL FINDINGS

On physical examination, the patient was found to be moderately built, with a height of 160 cm and weight of 62 kg, with a BMI of 24.2 kg/m^2. Her blood pressure was 112/62 mmHg, pulse rate was 90/min, and respiration rate was 20/min. Her Cardiovascular System and Respiratory System were found to be normal. She was afebrile to touch with no pallor and oe-

dema. On per abdominal examination, fundal height was found to be 36-37 weeks of gestation; lie was longitudinal with the cephalic presentation, Fetal Heart Rate was 142 beats/minute, and uterus was relaxed. However, fetal parts were easily palpable. Her appetite and bowels were normal, and she had no complaints in micturition. Her *Prakruti* assessment (physical constitution) revealed that she was of *Kapha-Vata prakruti* with *Madhyama Sara* (~moderate excellence of tissue elements) and *Madhyama Samhanana* (~moderate compactness of body tissues). She was of *Madhyama Satva* (~moderate psychic condition) and *Madhyama Vyayama Shakti* (~moderate power of performing exercise), *Madhyam Ahara Shakti* and *Jarana shakti* (~moderate food intake capacity and digestion).

TIMELINE

The patient was advised internal medicines (*Bala, Shatavari, and Yashtimadhu)* in the form of *Ksheerpaka* for seven days, and was again recommended ultrasonography (USG) [Table 1].

DIAGNOSTIC FOCUS AND ASSESSMENT

Diagnosis and follow up on the oligohydramnios was done by USG. USG (obs), dated January 19th, 2023, revealed a single live intrauterine pregnancy with a gestation period of 35+0 weeks and AFI= 7.1 cm with normal Doppler flow parameters. The follow-up to analyse the effect of the treatment was also carried out by USG, and the patient was also advised to visit OPD at suggested intervals so that the patient could be examined clinically. All blood and urine investigations were found to be expected. Only in the Complete Blood Count (CBC) report dated January 10th, 2023, were platelets 1,00,000/cumm, which was repeated. In reports dated January 28th, 2023, Haemoglobin was 13 gm/dl; platelet count- 120×10^3 /cumm; Coagulation Profile and Urine routine and microscopic were normal.

THERAPEUTIC FOCUS

From January 25th, 2023, onwards, she was treated with the internal administration of *Bala churna, Shatavari churna,* and *Yashtimadhu churna* in the form of *Ksheerpaka* for seven days [Table 1]. After seeing improvement in follow-up USG, the same treatment was continued until delivery.

FOLLOW-UP AND OUTCOME

The patient attended the OPD on January 25th, 2023, with an ultrasonography report suggesting AFI= 7.1 cm with normal Doppler flow parameters, although she didn't have any complaints. She started prescribed medication. The subsequent USG done to assess the fetal growth and amniotic fluid index showed significant improvement [Table 2]. She visited the OPD at regular intervals, as suggested. The patient was assessed clinically, and a Non-Stress Test (NST) was done every visit. The patient was also given a daily fetal movement count (DFMC) chart. The patient was admitted to the Labor Room on February 15th, 2023, at POG 40+2 weeks (by LMP) with Labour Pains and a full-term male baby weighing 2.58 kg was delivered with vertex presentation at 9:11 am on February 15th, 2023. No sign of fetal distress was seen during labour. The baby cried well immediately after birth. APGAR score was found normal. The whole procedure went uneventful.

Other investigations (28/01/2023): Hb- 13 gm/dl; platelet count- 120×10^3 /cumm; Coagulation Profile-regular; Urine routine & microscopic- normal.

DISCUSSION

Oligohydramnios is a condition arising due to the *Kshaya* (~decrease) of *Jaliya Mahabhuta* (water element of the body). So, accordingly, intervention should be chosen to maintain the *Jaliya Tatva*. In the present case, the detailed history revealed that the woman had faulty and irregular dietary habits with decreased fluid intake. She used to take street food very frequently. A healthy nutritional regimen is a must to carry the pregnancy to term without complications. In Ayurveda, *Acharya Sushruta* has mentioned the line of treatment of *Garbhakshaya* and *Garbhashosha* to manage oligohydramnios. *Acharya Sushruta* has mentioned the use of *Medhyanna* in the treatment of *Garbhakshya*[6] and *Brimhaniya paya* (milk) in the treatment of *Garbhashosha*[7]. Thus, *Shatavari, Bala, and Yashtimadhu* are given in the form of *Ksheerapana,* which have *Medhya* and *Brim-*

haniya properties and also having *Madhura Rasa* (~sweet taste), *Madhura* (~sweet) *Vipaka* (~principal taste after digestion), *Sheeta* (~cold), *Snigdha guna* (~unctuous property) can increase *Jaliya Tatva*.

Probable mode of action

Shatavari [8,9,10] has *Madhura-Tikta Rasa* (~sweet-bitter taste), *Madhura Vipaka*, *Sheeta* (~cold) *Veerya* (~pharmacological activity) and *Guru-Snigdha Guna* (~heavy and unctuous property). It has *Vatapittahara* properties. It is *Rasayan* (health rejuvenator), *Vrishya* (~aphrodisiac), *Stanya Janana* (~galactogogue), *Medhya* (~nootropic), *Agnivardhak* (~stimulation of digestive fire), *Pushtidayak* (~provides nourishment), *Balya* (~strength promoter), *Jeevaniya* (~erythropoetic), *Vayasthapana* (~imparts longevity).

Shatavari [11,12,13] has Steroidal saponins, known as *shatavarin* I-IV; Sarsasapogenin; Isoflavones; Asparagamine; Asparanin A, Diosgenin, Filiasparoside C, Racemosol; Racemofuran Polysaccharides; Fructo oligosaccharides-8; mucilage, flavonoids, Lignans, sitosterol, tannin; Vanillin; Succinic acid; Steroidal glucoside- 1-9; amino acids trace minerals like zinc, manganese, copper, along with calcium, magnesium, potassium, selenium, vitamins A, B1, B2, C, E, Fe and folic acid

The aqueous extract of roots also has antioxidant activity[14] and is considered an antenatal tonic.[15] All these properties provide essential nutrients to the mother and thus help maintain adequate amniotic fluid.

Bala (*Sida cordifolia* (Linn.)/ Malvaceae) has *Madhura rasa, Madhura Vipaka, Sheeta Veerya* and *Laghu* (~light), *Snigdha, Picchhila* (~slimy) *guna.*[16] It has *Vata-Pittahara* properties. It is *Brihaniya* (provides nourishment), *Balya, Prajasthapana* (helps in conception and sustenance of pregnancy), *Rasayana, Ojovardhaka* (~energizer), *Medha – smritikara* (~memory enhancer) and is mentioned in 4th -8th month *Grabhini Chikitsa*[17] (~treatment of a pregnant woman).

Bala contains mucins, potassium nitrate, Resins, Resins acid, Proteins, Carbohydrates, Fiber, Fat, Essential oils, Flavones and Alkaloids like ephedrine, pseudoephedrine, vasicinone, vasicine and vasicinol.[18] It has antioxidant and anti-inflammatory properties.[19]

Yashtimadhu (*Glycyrrhiza glabra* Linn./ Leguminosae) has *Madhura rasa, Madhura Vipaka, Sheeta Veerya, Guru- Snigdha Guna.* It has properties that pacify *Vata* and *Pitta*. It is *Vranaropana* (~healing properties), *Sothahara* (~anti-edematous/ anti-inflammatory), *Vedanasthapana* (~relieves pain), *Balavarnakara* (~enhances strength and colour), *Chakshushyam* (~beneficial for eyes), *Trishnanigraha* (~suppresses thirst), *Chardinigraha* (~suppresses vomiting), *Medhya, Balya, Jeevaniya, Rasayan.*[20]

The primary active component in *Yashtimadhu* is Glycyrrhizin, a saponin glycoside found in the roots, which makes up 10 to 25% of the liquorice content. It contains 60 times the sweetness of cane sugar. Flavonoid-rich fractions include liquertin, isoliquertin, liquiritigenin, and rhamnoliquirilin, and five novel flavonoids are identified from dried roots. A novel prenylated isoflavonoid counterpart, Kanzonol R, is also found.[21, 22] It has aspirin-like properties. The Indian Herbal Pharmacopoeia recognises its usage as an anti-inflammatory and anti-ulcer agent.

All the drugs' above-mentioned properties provide essential nutrients to the mother, increase placental perfusion, and thus help maintain adequate amniotic fluid.

Cow's milk possesses ten beneficial properties viz., *madhur, sheeta, mridu* (~soft), *snigdha, bahala* (~thick), *slakshna* (~smooth), *pichhila, guru, manda* (~slow) and *Prasanna* (~pleasant quality) which are also the properties of *ojas* (~essential energy of the body and mind). This indicates that milk, with its similar properties, promotes the enhancement of ojas and can be considered an elixir.[23]

Cow's milk (per 100ml)[24] contains 87.2g of water, 3.5g of proteins, 3.7g of fat, 4.9g of lactose, and 0.72g of ash. Whole milk contains 0.30-0.5 g/kg of phospholipids. Additionally, it contains minerals such as sodium, phosphorus, magnesium, potassium, copper, zinc, calcium, and iodine, as well as varying levels of vitamins A, D, and E, depending on the season. The nutritional value of milk is notably high due to

the balanced composition of these beneficial nutrients.

CONCLUSION

Oligohydramnios often develops in the third trimester or at term, and it can increase the risk of fetal distress, the need for operative intervention and stillbirth. The study above demonstrates a significant increase in AFI within a short period. Therefore, Ayurveda can be considered an effective alternative medicine for maintaining the amniotic fluid as all the mentioned medicines nourish the fetus. Additionally, no adverse effects were observed. However, it's important to note that this is just a case study, and the effectiveness of these drugs could be further established through research on a more significant number of patients.

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