AYURLOG
National Journal of Research in Ayurved Science
A peer-reviewed open access Indexed e-journal of Ayurved

http://www.ayurlog.com April- 2020 | Volume 08th | Issue: 2nd ISSN: 2320-7329

Intrauterine growth retardation (upavishataka garbhavyapad) and it's ayurved and modern management – review of literatures.

Snehal Bhaskarrao Sanap*[1] , Prakash R. Kanade [2]

1. PG scholar
2. Professor & HOD

Department of Prasuti Tantra And Stri Rog,
PMTS Ayurved College, Shevgaon, Ahamadnagar, Maharashtra
*Corresponding author:

ABSTRACT-

According to modern science , intrauterine Growth Restriction (IUGR) is an important causes of fetal and neonatal morbidity and mortality.

In IUGR development and maturity of foetus delayed or impaired. Fetal growth restriction is said to be present in those babies whose birth weight is below the 10th percentile of the average for the gestational age. Growth restriction can occur in preterm , term, or post term babies.(1) Placental insufficiency or utero placental insufficiency is most imp. Cause of intrauterine growth restriction.

The signs and symptoms of IUGR and Upavishtaka are same .In Ayurveda Upavishtak is described under Garbhavyapads.In ayurvedic literature, there are many natural formulations, various drugs have been described for treatment is based upon basic principles such as rasa , guna ,veerya,vipak of drugs.Hence to study the concept of IUGR (upavishtaka) according to modern and Ayurveda; this topic has been selected for study.

Keywords- IUGR , Garbhavyapad , upavishtak , Ayurveda.

INTRODUCTION:

Fetal growth restriction is said to be present in those babies whose birth weight is below the 10th percentile of the average for the gestational age. Growth restriction can occure in preterm , term, or post term babies.(1)

Intrauterine growth restriction IUGR refers to poor growth of fetus while in mother's womb during pregnancy. The causes can be many, but most often involve poor maternal nutrition or lack of adequate oxygen supply to the fetus. At least 60% of 4 million neonatal deaths that occurs world wide every year are associated low birth weight caused by intrauterine growth restriction IUGR, preterm delivery, and genetic abnormalities, demonstrating that under nutrition is already a leading health problem at birth.(2)

In all ayurvedic text ,Garbhiniparicharya is described in detail. Aim of the Garbhiniparicharya is described as – Anupaghataya means continuation of

pregnancy without any complication in mother and fetus .

In Ayurveda garbhavyapads are explained Garbhasrav, Garbhapat, Upavishtak, Lingarbha, Nagodar, Mrutgarbha makkal vishakanbha .out of which I decided to conduct work on upavishtak. IUGR correlates with Upavishatak Garbhavyapad. Upvishtaka garbhavyapada is associated with nourishment of foetus for which it is tottally depends on mother .In Ayurveda causes of upavishtak are Ushna& tikshna aahar, Atishram, Divaswap, pushpadarshan yonigatraktastrav, garbhaupghatkar bhava. The signs and symptoms of IUGR and Upavishtaka are same . There are many natural formulations ,various drugs have been described for treatment of Upavishatak garbhavyapad in various ayurved literature. Timely diagnosis and management of IUGR are one of the majour achievement in contemporary obstetrics. If growth restriction fetus identified and appropriate management given , the perinatal mortality can be reduced.

Hence there is need to study the concept of intrauterine growth retardation (upavishtaka garbhavyapad) and its management from various literature.

A) MODERN VIEW [3]

NORMAL FETAL GROWTH –Normal fetal growth is characterized by cellular hyperplasia followed by hyperplasia and hypertrophy and lastly hypertrophy alone .

1) **ETIOLOGY**

The causes of fetal growth restriction can be divided into four groups-

1) maternal 2) fetal 3) placental 4) unknown`

A) Maternal-

1) Constitutional –small women, slim, low BMI , maternal genetic and racial background are associated with small babies.
2) Maternal nutrition before and during pregnancy.
3) Maternal disease – anemia, hypertension ,thrombotic disease , heart Disease, chronic renal disease , Hyperthyroidism , DM etc.
4) Toxins- alcohol , smoking, cocaine, heroin etc.

B) FETAL-

1) Structural anomaly –
2) Chromosomal abnormality – Trisomies 13,18,21
3) Infection –TORCH 4) Multiple pregnancy ETC.

C) PLACENTAL-

The causes include cases of poor uterine blood flow to the placental site for a long time. this lead to chronic placental insufficiency with inadequate substrate transfer . the placental pathology include : placenta previa, Abruption, circumvallate , infarction and mosaicism.

D) UNKNOWN-The causes remain unknown in about 40%.

E) PREDECTIVE FACTORS FOR IUGR-

1) presence of high risk factor (obstetrics, medical) 2) Alow level of 1st trimester PAPPA-1 value. 3) Abnormal uterine artery Doppler value (notching) at 20 -24 wks of pregnancy. 4) fetal echogenic bowel on USG.

2) Types

ASYMMETRICAL	SYMMETRICAL
Uniformly small	Head larger than abdomen
Ponderal index (birth weight/ crown-heel length3)—normal	Low
HC:AC & FL:AC ratio – normal	Elevated
Etiology : genetic disease or infection-(intrinsic to fetus)	Chronic placental insufficiency- (Extrinsic to fetus)
Total cell number - less Cell size – normal	Normal Smaller
Neonatal course - complicated with poor prognosis	Usually uncomplicated having good prognosis .

3) **PATHOPHYSIOLOGY-**

Reduced availability of nutrition in the mother or its reduced transfer by placenta to fetus or reduced utilization by fetus.

–due to this cell size and cell number reduced

1) Liver glycogen content reduced
2) Oligohydramnios—as renal and pulmonary contribution to amniotic fluid is diminished due to reduction in blood flow to these organs.

4) **DIAGNOSIS-**

A) CLINICAL-

1) Clinical palpitation of uterus for fundal height , liquor volume and fetal mass may be used for screening but it is less sensitive.
2) Symphysis fundal height – measurement in centimeters closely correlates with gestational age after 24 wks .a lag of 3cm or more suggests growth restriction .
3) maternal weight gain –pg no 57.
4) measurement of abdominal girth-

A) BIOPHYSICAL -

1) Head circumference(HC) and Abdominal circumference(AC)ratio-

* In normally growing fetus-HC/AC exceed 1 before 32 wks.
* Approximately 1 at 32 wks-34wks.
* After 34wks it fall below 1 .
* If the fetus is affected by asymmetric IUGR ,the HC remains larger .
* The HC /AC is then elevated .
* In symmetric IUGR ,both HCand AC are reduced .HC/AC remains normal.

2) FEMUR LENGTH(FL)-

* Is not affected in asymmetric IUGR.The FL/AC ratio is 22 at all gestational ages from 21 wks to term.
* FL/AC ratio > 23.5 suggests IUGR.

3) **AMNIOTIC FLUID VOLUME-**

***** Single deepest vertical pocket of amniotic fluid <1 cm suggests IUGR in 96% of fetuses.

* AFI between 5-24 cm is normal and AFI <5cm indicates Oligohydramnios.

C) **ULTRASOUND DOPPLER PARAMETERS-**

1) Doppler velocimetry-

Elevated systolic /diastolic ratio , the resistance index (RI)and pulsatility index(PI)indicate increase blood flow resistance and decrease end diastolic velocity .These are associated with FGR and intrauterine fetal hypoxia.

2) UTERINE ARTERY-

The presence of DIASTOLIC NOTCH suggest incomplete invasion of placental trophoblast to the uterine spiral arteries.This aslo predicts the possible development of pre-eclampsia . Normally

,the diastolic flow increases as a pregnancy progresses.

3) UMBILICAL ARTERY-

Decrease end diastolic velocity indicates increase placental vascular resistance. There is progressive decrease in umbilical artery end diastolic velocity - reduced fetomaternal O2 and nutrient exchange .

4) **UMBILICAL VENOUS PULSATION-**

Indicate inefficient cardiac output with rise in central venous pressure -impending cardiac failure .Abnormal venous Doppler parameters (Ductus venosus) are the imp. Predictors of still birth.

5)**MIDDLE CEREBRAL ARTERY-**

Increased diastolic velocity (Brain sparing effect) is observed in a compromised fetus . This is due to cerebral vasodilatation in response to hypoxemia.

6) **DUCTUS VENOSUS DOPPLER STUDY-**

Can predict fetal academia and adverse perinatal outcome.

7) **PONDERAL INDEX-**

The degree of fetal wasting is judged by fetal PI.

PI= { WEIGHT(Gm) / LENGTH (Cm)3} X 100.

PI below 10^{th} percentile is taken as IUGR.

8)BIOCHEMICAL MARKER-

PAPPA-A = A low level of PAPPA-A in a maternal serum in the first trimester of pregnancy is considered a marker of major risk factor for FGR.

5) COMPLICATIONS-

Fetal

(a)Antenatal-Chronic fetal distress fetal death

(b) Intranatal-Hypoxia and acidosis

(c) After birth

Immediate

1. Asphyxia, bronchopulmonary dysplasia RDS.
2. Hypoglycemia due to Shortage of glycogen reserve liver.
3. Meconium aspiration syndrome
4. Microcoagulation leading to DIC.
5. Hypothermia.
6. Pulmonary hemorrhage
7. Polycythemia ,anemia, thrombocytopenia.
8. Electrolyte abnormality- hypocalcemia, hyperphosphatemia, hypokalemia due to impaired renal function.

Late:

Asymmetrical IUGR babies tend to catch up growth in early infancy.

(1) Retarded neurological and intellectual development in infancy.

(2)Increased risk of metabolic Syndrome in adult life: obesity, hypertension, diabetes and coronary heart disease (CHD).

Maternal :

fetal growth restriction does not cause any to the mother. But underlying disease process like preeclampsia , heart disease, malnutrition may be life threatening.

MORTALITY:

The immediate neonatal mortality is about 6 time more the normal newborn. However, it is lower than premature AGA infants of the same birth weight.

70% required no intervention. The fetuses that are symmetrically growth restricted 15% , should be investigated to exclude fetal anomalies ,infection and genetic syndrome.

MANAGEMENT-

GENERAL-

1. Adequate bed rest specially at left lateral position to increase uteroplacental blood flow.

2. Balance diet- 300 extra calories per day.
3. Avoid smoking,Tobacco ,alcohol.
4. Maternal hyperoxygenation at the rate of 2.5 lit /min by nasel prong ,for short term prolongation of pregnancy.
5. Low dose of ASPIRIN 75 mg daily may be helpful in very selected cases with history of thrombotic disease, hypertension, pre-eclampsia or recurrent IUGR.
6. Maternal hyperalimentation by amino acids can improve fetal growth if it was due to maternal malnutrition .It is not helpful when placental function is deficient.

ANTEPARTUM EVALUATION-

1) USG- should be done at an interval of 3-4 wks for the assessment of

BPD, HC/AC, fetal weight , AFI .

2) **FETAL WELLBEING-**

Is assessed by kick count, NST twice a week, biophysical profile ,Amniotic fluid volume and cordocentesis

TIMING OF PREGNANCY-

OPTIMUM TIME OF DELIVERY- for growth restricted fetus may be between 34 wks and 37 wks depending upon the presence of any additional risk factor like- oligohydramnios , preeclampsia, abnormal Doppler study.

A) **PREGNANCY > 37 WKS** – Delivery should be done

B) **PREGNANCY <37 WKS** – a) **uncomplicated mild IUGR** –treatment to improve Placental function . pregnancy is continued at least 37 wks .There after delivery is done.

C) S**ever degree of IUGR-**

1) Delivery should be planned on the basis of fetal surveillance report.
2) If the lung maturation is achieved as evidenced by presence of posphatidylglycerol and L.S. ratio >= 2 from the amniotic fluid study (Amniocentesis), delivery is done.
3) 3) If lung maturation has not yet been achieved –Betamethasone therapy is given to accelerate pulmonary maturation when gestational age is less than 34 wks . corticosteroids reduce the risk of neonatal HMD and intraventricular hemorrhage(IVH) .
4) Delivery to be done at 34 0/7 wks of gestation in case of FGR with additional risk factors for adverse perinatal outcome (pre-eclampsia, oligohydramnios,)
5) When delivery is to be done preterm antenatal corticosteroids should be given.
6) When delivery is to be done before 32 wks , $MgSO_4$ should be given to mother for fetal and neonatal neuroprotection.
7) Fetuses with Aneuploidy or congenital infection have poor outcome irrespective of gestational age and timing of delivery.

METHODS OF DELIVERY-

1) Pregnancy > 34 wks ----

a) favorable cervix and head engaged --- Low rupture of membrane followed by Pitocin
b) unfavorable cevix----- prostaglandin gel used.

2) cesarean delivery without trial of labour is done when risk of vaginal delivery are more (presence of fetal academia, absent or reversed diastolic flow in umbilical artery or unfavorable cervix)

INTRAPARTUM MONITORING-

By clinical , continuous electronic and scalp blood sampling is needed as a risk of intrapartum asphyxia is high.

B) AYURVED VIEW

In Ayurvedic text, various aspect of embryology including preconceptional Shuddhi of Shukra, Arthava, Garbhashaya, Yonimarga, Garbhotpatti, Garbhaposhan etc are described in details. Various disorder affecting fetal health such as Garbhastravapata, Upvistaka, Nagodara, Garbhashosha, garbhashaya, Lingarbha , Mritgarbha are also described in depth along with their treatment. In samanyachikitsa of upavishtka different Acharyas explains different type of chikitsa for vriddhi and poshana of garbh.

1) **ETIOLOGY[4]:**

Ushna and Tikshna aahar (hot & pungent), Atishram (over exertion), Divaswap (day sleep), Pushpadarshan (bleeding per vaginum

2) **Samprapti-**

Upvishtaka:-

While describing Upavishtaka ,Acharya Charaka had stated that ,if bleeding per vaginum or other type of discharges occurs in pregnant female having Sanjatsara garbha, the fetus does not grow properly and stay in uterus for very long time[5].

Author	Etiology	Clinical features	Period of delivery	Principles of treatment
Charaka Samhita	Use of hot,pungent articles,bleeding or other vaginal discharge in sanjatasara-garbha.	Absence of fetal growth, prolonged intra-uterine stay.	After considerable Delay.	Jivaniya , Bruhaniyad Drugs . Aamgarbha (egg)
Ashtang Sangraha	Due to use of contra-indicated articles in sanjatasara-garbha, continuous but less bleeding per vagina causing aggravation of vata and obstruction to Rasavahanadi	Absence of abdominal growth, quickening Of The fetus without a decrease in its sizes	After years.	Same as charak samhita
Ashtang Hridaya	Bleeding in developed fetus	Same as Ashtang Sangraha.		Vataghna and remaining treatment is same as like charaka samhita.

3). Management

1) Bed rest specially in left lateral position .
2) Maternal Dietary Supplementation: - To correct malnutrition by balanced diet 300 extra calories per day are to be taken .
3) High protein diet 6
4) Use of Shali rice, Dugdha (milk) and Aamgarbha (egg) should be given for Vriddhi and Poshan of Garbha. Rice gruel cooked with ghrita extracted from goat's milk,

drug of Jivaniya group and goat's milk.

5) Essential nutrients supplementation prevent adult metabolic disease in a trans generational model of IUGR . 7
6) WHO recommended diet .8
7) Avoidance of smoking and alcohol.

Drug indication: -

A. Jeevaniya, Madhura, and Vataharadravyas are used with Ghrita,Dugdha and amagarbha should be given .[9]
B. Vacha ghrita, Maha paishachika ghrita.
C. Shatavari, Ashwagandha, Gambhari, Yastimadhu, Guduchi etc.Formulation of Shatavari q-6gm), Kshirpak.

- Formulation of Guduchi – powder, ghanvati, Satva etc.
- Formulation of Gambhari – Decoction of root
- Anuvasan Basti by medicated ghrita with drug of Darvyadi group.
- Probable action of Drugs

Ashwagandha [10] (Withania somnifera):-

It possess the Gunas as Vatakaphaghna, Brihaniya, Rasayan ,Deepaniya, Vrishya and Garbhasthapana. Hence it has a good nutritive value, helpful to increase muscle tone of uterus also acts on microcirculation. Antioxidant property neutralizes free radicals there by limiting the oxidative damage, antispasmodic and relaxant effect improves placental circulation which is one of the main reasons for IUGR.

Yashtimadhu[11] (Glycorrhiza glbra):-

It posses antioxidant properties and also act as a Rasayan, Balya, Garbhaposhak, Jeevaniya. It also helps in improving debility.

Laghumalinivasanta Rasa[12]:-

It is one of the Vasantkalpa which is Madhur, Balya, Garbhaposhak and Garbhvridhikar. The drug Laghumalinivasant contains Shudha Kharpar, Marich with butter. Kharpar, which acts on mainly Rasavahini, Rasadhatvagni, Rasutpadan Vikriti Agnimandya, hence it is very effective in treatment of Upavishtak which is caused by severe Dhatukshay.

Gambhari[13]:-

It is Tridoshashamak ,Balya, Bruhaniya, Rasayan, Deepaniya and Pachaniya drug helps in IUGR caused by Dhatvagnimandya. Its Tikta rasa helps to remove obstruction and thus the fetus can get it maximum Poshan and complication of LBW can be prevented.

Shatavari[14]:

It is Rasayan, Balya, Pushti, Snigdha Gunatmak. It possesses antioxidant properties. It also works on Agnimandya, hence it is very effective in treatment of Upavishtaka which is caused by severe Dhatukshaya. Steroidal saponins present in Shatavari help in cellular hypertrophy (growth).

Discussion and conclusion:

IUGR newborns are common in the developing countries. a significant global burden of iugr neonates is contributed by the Asian continent. Poor socioeconomic status ,poor care of the girl child medical and obstetric disorders complicating pregnancy contribute to a significant properties of iugr in developing countries. IUGR infants face multiple problems from birth to adolescence. They are more prone to immediate mortality and morbidities ,apart from experiencing the long term

growth deficits and abnormal neurodevelopment.

Upavishataka i.e IUGR is one of the garbhavyapada. It is a common disorder and carries the increased risk of morbidity and mortality in obstetrics. Diagnosis and identification of IUGR are crucial .Timely diagnosis and management of IUGR are one of the measured achievement in contemporary obstetrics.proper evalution and management by Ayurveda and modern can result in favourable outcome .

References--

1. DC DUTTA Text book of Obstetrics including perinatology and contraceptive edited by Hiralal Konar, Jaypee Brothers Medical Publisher ,8 th edition 2015 Page.536.
2. https://en.m.wikipedia.org
3. DC DUTTA Text book of Obstetrics including perinatology and contraceptive edited by Hiralal Konar, Jaypee Brothers Medical Publisher ,8 th edition 2015 Page.536-540.
4. Vaidya yadavji trikamji Acharya, charaka samhita with ayurved Deepika commentary by Chakrapanidatta , munshiram Manoharlal publishers Pvt. Ltd. 2011, page no. 345.
5. Vaidya yadavji trikamji Acharya , charaka samhita with ayurved Deepika commentary by Chakrapanidatta , munshiram Manoharlal publishers Pvt. Ltd. 2011, page no. 345.
6. Community. Babycenter.com
7. www.adjog.org/article.
8. WORLD HEALTH ORGANIZATION ,healthy eating during pregnancy and breastfeeding, Europe , WHO Regional office , 2001.
9. Bramhanand Tripathi with Hindi vyakhya , choukhamba surbharati prakashan , Varanasi, 2006.
10. Bhavaprakasha of bhavmishra commentary by K.C. Chunekar, edited by G.S. Pandey, Choukhambha Bharati Academy, Varanasi, 2004. page no. 393.
11. Bhavaprakasha of bhavmishra commentary by K.C. Chunekar, edited by G.S. Pandey ,Choukhambha Bharati Academy, Varanasi , 2004.page no 65
12. Pt. Shri. Brahma Shankara Mishra , Bhavaprakasha of Bhavamishra with Vidyotini Hindi commentary ,Chaukhambha sanskrita samsthana ,Varanasi ,5th edition 1993.
13. Bhavaprakasha of bhavmishra commentary by K.C. Chunekar , edited by G.S. Pandey ,Choukhambha Bharati Academy, Varanasi , 2004.page no 277.
14. Bhavaprakasha of bhavmishra commentary by K.C. Chunekar, edited by G.S. Pandey,Choukhambha Bharati Academy, Varanasi , 2004.page no392.

Conflict of Interest: Non *Source of funding: Nil*

Cite this article:

Intrauterine growth retardation (upavishataka garbhavyapad) and it's ayurved and modern management – review of literatures.

Snehal Bhaskarrao Sanap, Prakash R. Kanade

Ayurlog: National Journal of Research in Ayurved Science- 2020; (8) (2): 01-08