

CRITICAL ANALYSIS OF NEONATAL CARE (NAVJATA SHISHU PARICHARYA) IN BRIHAT TRAYI

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Abstract

Care of new born right from just after birth till the first feeding has been described by three major treatise of Ayurveda, the Brihatrayi. It includes Charaka Samhita, Sushruta Samhita and Astanga Hridaya. The steps included in neonatal care or Navjata Shishu Paricharya are Prana pratyagama (neonatal resuscitation), Ulva parimarjana (cleaning of the vernix caseosa), Naalchedan (cutting of umbilical cord), Snana (neonatal bath), Mukh vishodhan (cleaning of oral cavity), Garbhodak vama (clearing of neonate's stomach), Jata karma (birth rite) and Raksha karma (protection of baby). This article presents a critical study of the procedures included in Navjata Shishu Paricharya revealing their scientific relevance and utility in adequate care of new born. The materials were collected from the classical Ayurvedic literatures, pediatric textbooks, magazines and research journals. The measures of care of new born described in our ancient texts indicate their wisdom regarding resuscitation, prevention of hypothermia, aspiration and infections and promotion of rooming in and early initiation of breast feeding.

Keywords: Navjata Shishu Paricharya (Neonatal care); Cutting of umbilical cord; Birth rites.

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INTRODUCTION

Kaumarbhritya is one of the eight branches of Ayurveda, which deals with the care of children, their diseases and respective treatment. The subject matter of this branch is available primarily in Sharir Sthana and Uttar Tantra of treatise comprising Brihat Trayi. It also includes neonatology, amongst which care of newborn (Navjata Shishu Paricharya) is described in detail. This includes Prana pratyagamana (neonatal resuscitation), Ulva parimarjana (cleaning of the vernix caseosa), Naalchedan (cutting of umbilical cord), Snana (neonatal bath), Mukhvisodhan (cleaning of oral cavity), Garbhodak vaman (clearing of neonate's stomach), Jata karma (birth rites) and Raksha karma (protection of baby). This article presents a critical evaluation of the procedures included in Navjata Shishu Paricharya. A thorough study of the texts reveals the scientific relevance and utility of neonatal care described in Ayurveda.

MATERIALS AND METHODS

The materials were collected from the classical Ayurvedic literatures, pediatrics textbooks, magazines and research journals.

Classical description & relevance

The detailed analysis of each step of Navjata Shishu Paricharya, classical description and their relevance are as follows:

1. Prana pratyagamana (neonatal resuscitation)

Acharya Charaka opines that immediately after birth of baby, while taking steps to bring out placenta, the following measures should be taken for the resuscitation of the fetus: striking of stones near the base of ears of baby, sprinkling cold water in summer and hot water in winter on the face of baby. By these measures, baby will regain consciousness which was lost as a result of the strain caused

by the pressure of bearing down during process of delivery. But even after these steps if the baby remains flaccid, then he should be fanned with a fan prepared of straps of bamboo till he starts breathing.^[1] Astanga Hridaya recommends rubbing of Bala Taila on baby's body and making sound by hitting two stones together at base of ear. Sacred hymns should be chanted in right ear of baby.^[2]

Relevance

Acharya Charaka has laid emphasis on initiation of Prana Pratyagamana measures immediately after birth along with efforts for placenta extraction without losing any time. This highlights their understanding of the fact that initial few minutes of neonate's life are crucial for prevention of brain damage due to delay in resuscitation. Striking of two stones near mastoid or base of ear produces intense sound stimulating vestibule cochlear nerve. It is a sensory nerve whose afferent branch carries sensation to its nuclei situated on the floor of the fourth ventricle, near respiratory centre, which is also stimulated and respiration begins. Also this process of striking stones irritates auricular branch of vagus nerve, which triggers coughing in baby. Sprinkling hot or cold water may stimulate the sensory fibres of facial nerve which stimulates the respiratory centre in brain and its motor fibres draw up hyoid bone and open epiglottis, thus initiating respiration. Waving air by a blackened fan gives fresh air which has 21% of oxygen. Even today when oxygen supply is not available, it is recommended to resuscitate with room air.^[3]

Rubbing of Bala taila on baby's body serves the purpose of tactile stimulation, temperature maintenance and providing strength to baby. Enchanting of hymns close to baby's ear may serve as a psychological support to mother and an auditory stimulus to baby.

2. Ulva parimarjana (cleaning of the vernix caseosa)

Acharya Sushruta opines that ulva or vernix of baby should be cleaned immediately after birth by ghee and rock salt.^[4] Vagbhata holds similar view and describes that cleaning of ulva from baby's mouth and body should be performed immediately after birth using rock salt and ghee.^[5]

Relevance

Rubbing ghee and rock salt on baby's body for removal of vernix gives sufficient tactile stimulus to resuscitate a baby in primary asphyxia. Ghee also serves as an insulating agent and prevents hypothermia. Clearing the oral cavity of any vernix residues prevents its aspiration into the respiratory passage when baby gasps for breath.

3. Naalchedan (cutting of umbilical cord)

Acharya Charaka prescribes Naalchedan after Garbhodak vama while Acharya Sushruta recommends it after Mukha vishodhana and Pichu dharana. Acharya Vagbhata has described cutting of umbilical cord after Ulva parimarjan and resuscitative steps. Charaka elaborates that the cord should be marked at a distance of eight angulas (approximately 25.5 cm) from its root where it is attached with navel. Both the sides of this mark should be carefully occluded by hand and with help of an Ardhadhara type of instrument, made of gold, silver or steel, the cord should be cut at this mark. The distal end of the cord should be tied with help of a thread and the ends of the thread should be loosely tied to the neck of the baby. If there is suppuration of umbilical cord, oil boiled with paste of lodhra (*Symplocos racemosa*), madhuka (*Glycyrrhiza glabra*), priyangu (*Callicarpa macrophylla*), suradaru (*Cedrus deodara*) and haridra (*Curcuma longa*) should be applied. Powder of the medicines prescribed for oil preparation should be sprinkled over suppurated

umbilicus.^[6] The length of cord to be left is proposed to be eight and four angulas (fingers) by Sushruta and Vagbhata respectively, which is to be tied by a thread before cutting and hanged loosely to child's neck thereafter.^[7] Vagbhata also suggests anointment of cord by Kushta taila.^[8]

Relevance

Cutting of umbilical cord is done after completion of resuscitative measures and stabilization of baby. It is advised to clamp the cord by thread to avoid bleeding which may lead to hypovolemic shock. Fastening of the cord to baby's neck prevents bleeding and also avoids its soiling with feces and urine of baby, so as to prevent cord infections. Sufficient length of cord is left to avoid straining of cord while tying and at the same time not letting it hang too loose. Kushtha (*Saussurea lappa*) used for cord care has jantughna (anti-infective), vedana sthapana (analgesic) and shotha hara (anti-inflammatory) properties.^[9]

4. Snana (neonatal bath)

According to Acharya Charaka, when respiration is established in the neonate and he is in a stable condition, his excretory passages should be cleaned with water and he should be given bath.^[10] Sushruta prescribes bathing of neonate after Jata karma. He says that baby should be massaged with bala taila and then bathed with decoction of laticiferous trees, water of aromatic drugs (eladi gana) or water heated with silver or gold or warm decoction of kapittha (*Limonia acidissima* Linn.) leaves in accordance with season, dosha and means.^[11] Astanga Hridaya has also given similar views.^[12]

Relevance

Bathing of baby maintains hygiene and prevents rashes like erythema toxicum. Medications used to prepare the bathing water promote healing of umbilical stump and have

dosha pacifying properties. Ksheeri vriksha consists of Nyagrodha (*Ficus bengalensis*), Udumber (*Ficus glomerata*), Ashwatha (*Ficus religiosa*), Parisha (*Thespesia populnea*) and Pakara (*Ficus infectoria*). *Ficus bengalensis* showed antimicrobial activity,^{[13][14]} anti-inflammatory and analgesic activity.^[15] *Ficus religiosa* showed antioxidant, wound healing and anti-inflammatory activity^[16] and antimicrobial activity.^[17] *Ficus glomerata* reported anti-inflammatory activity^[18] and antimicrobial activity. *Thespesia populnea* showed antimicrobial activity,^[19] mast cell stabilization and anti-anaphylactic activity,^[20] and anti-inflammatory activity.^[21] *Albizia lebbek* showed analgesic and anti-inflammatory activities,^[22] anti-arthritic and antioxidant property,^[23] analgesic and antipyretic activity.^[24] Sarva gandha group consists of Chaturjata [Dalchini (*Cinnamomum zeylanicum*), Tejapatra (*Cinnamomum tamala*), Ela (*Elettaria cardamomum*), Nagakeshara (*Mesua ferrea*), Karpura (*Cinnamomum camphora*), Kankola (*Piper cubeba*), Aguru (*Aquilaria agallocha*), Shilarasa (*Liquidamber orientalis*), Lavanga (*Syzygium cumini*)].^[25] Dalchini shows anti-inflammatory activities^[26] and anti-microbial activity.^[27] Tejapatra shows antimicrobial activity, antioxidant activity, and anti-inflammatory, analgesic and antipyretic activity.^{[28][29][30]} Ela shows antimicrobial activity.^[31] Nagakeshara shows anti-nociceptive and anti-inflammatory activity, antioxidant activity and analgesic activity.^{[32][33][34]}

5. Mukhvisodhan (cleaning of oral cavity)

Acharya Charaka recommends that palate, lips, throat and tongue of neonate should be wiped with attendant's finger, whose nails are properly clipped off and which are well cleaned and covered with cotton swabs. After cleaning the mouth, shiras talu (anterior fontanel) of baby should be covered with cotton swabs soaked with unctuous substances.^[35] Acharya Sushruta has

prescribed the use of ghee and rock salt for oral cleaning. Covering fontanel by ghee soaked cotton has been advocated by both Sushruta and Vagbhata.^[36]

Relevance

Cleaning of oral cavity of newborn prevents aspiration of amniotic fluid, blood, meconium or vernix into respiratory tract when baby starts breathing. Thus, this measure rules out risk of aspiration pneumonia (Ulvaka). Placing a ghee soaked cotton piece on anterior fontanel prevents heat loss from the large surface area of neonate's head and also protects it from injury.

6. Garbhodak vamana (clearing of neonate's stomach)

Charaka samhita and Astanga Hridaya, both hold the view that the child should be given ghee mixed with rock salt for emesis so that stomach is cleared of its contents.^{[37][38]}

Relevance

Clearing the stomach of its contents prevents chances of regurgitation and aspiration of regurgitated contents. It also prevents vomiting after feeds which may occur due to irritant effect of meconium, blood or amniotic fluid present in stomach.

7. Jata karma (Birth rites)

Jata karma is the first sacrament done after birth. It involves the first feeding of baby. It is performed as described in Vedas. First of all, child should be given honey and ghee impregnated with hymns prescribed in Vedas. Thereafter following similar ritual, milk from the right breast should be given to the child at first. An earthen jar filled with water should be impregnated with mantras and kept near the head of the child.^[39] Acharya Sushruta states that baby should be given to lick gold bhasma

(incinerated powder) mixed with honey and ghee with index finger.^[40] Astanga Hridaya prescribes a prashya (confection) for baby to confer intelligence, long life and good strength in the dose of one harenu (peas) in quantity, fortified with sacred hymns. The confection is prepared from the paste of aindri (*Bacopa monnieri*), brahmi (*Centella asiatica*), vacha (*Acorus calamus*) or sankhpushpi (*Convolvulus pluricaulis*) and added with ghee and honey or with gold, vacha (*Acorus calamus*), brahmi (*Centella asiatica*), tapya and haritaki (*Terminalia chebula*) or the bhasma of gold and amalaki (*Embllica officinalis*) may be given with ghee and honey. Jata karma should be performed by prajapatya method described in religious texts.^[41]

Relevance

Jata karma is the birth rite which helps the baby transcend from intrauterine life to extra uterine life. Swarna prashan given to baby by gold bhasma, honey and ghee serves the purpose of both nutrition and immunization. Honey and ghee have a high caloric value, giving energy to baby whose previous source of nutrition from placenta has stopped. Honey also serves as a mild allergen, which gives the first opportunity to baby's body to start the synthesis of antibodies, thus shielding the baby from infections. Also this first feed initiates gastrointestinal movements and activates the gut. Gold powder gives physical protection to baby, enhances brain development and is in micro particles easily absorbable by baby's intestine. This licking of medicine preparations also gives an opportunity to physician to assess the rooting and sucking reflex of neonate. Use of Mantra in Jata karma gives psychological support to parents especially mother. A relaxed, confident attitude of mother helps the milk ejection reflex. Breast feeding is to be given on the first day so as to ensure proper nutrition and protective immunoglobulin present in colostrum. Early initiation of breast feed also stimulates prolactin reflex and oxytocin reflex.

The water filled earthen jar may serve cooling purpose or maintenance of humidity in baby's ward room.^[42]

8. Raksha karma (protection of baby)

Ayurvedic classics describe measures for preventing infection in a neonate. Branches of khadira (*Acacia catechu*), karkandhu (*Zyzyphus nummularia*), pilu (*Salvadora persica*) and parushaka (*Grewia asiatica*) should be placed all around the sutikagara (wardroom for mother). Grains of mustard, atasi (*Linum usitassimum*) and broken rice should be scattered in sutikagara. Till the naming ceremony (on tenth day), tandula bali homa (a type of ritual in which rice is offered to the sacred fire) should be performed twice a day. At the entrance of sutikagara a moosal (a large pestle) should be kept obliquely. Pieces of vacha (*Acorus calamus*), kushta (*Saussurea lappa*), hingu (*Ferula narthrex*), sarshapa (*Brassica nigra*), atasi (*Linum usitassimum*) and lashuna (*Allium sativum*) and such other drugs which are known to provide protection from the attack of evil spirits should be tied in a packet and hanged to the upper beam of door of sutikagara. Similar smaller packets should be tied to neck of mother and baby. These packets of drugs should also be placed in cooking utensils, serving vessels, water jars, cloth and bed sheet of mother and baby. Inside the sutikagara, fire lit from tinduka (*Diospyros peregrina*) should be constantly kept burning. Female attendants who are friends to mother should keep constant vigil by remaining awake for ten to twelve days. The whole house should be full of affectionate people and celebrations should be made. To bestow auspiciousness upon the mother and child, Brahmins well versed with the Atharva Veda should offer prayers twice a day.^[43]

Relevance

Placing of herbs in ward room and tying it to neonate reduces chances of infection as these

medicines have rakshoghna (anti-microbial) properties.

Scattering of small seeds on floor serves similar purpose along with the practical benefit that insects find it difficult to crawl on such surface reducing chances of insect bite. Fumigation of the sutikagaraa by various drugs is mentioned to protect the baby from various opportunistic infections. Lighting of fire inside the ward room provided better visibility of neonate for its care especially at night. Female attendants remaining awake at night are required for catering to needs of baby so that mother can have adequate rest. Offering of prayers are a form of daivvyapashraya (divine) treatment which are a source of psychological support to mother and family. Also regular cleaning of the ward room prior to performing prayers serves to observe hygiene. Raksha karma is prescribed for atleast ten days which includes early neonatal period, the most vulnerable time for a newborn. Keeping a large pestle obliquely at the entrance of sutikagara may serve as a no entry signal to avoid unnecessary overcrowding, thus checking potential source of contamination in baby's and mother's room.

CONCLUSION

The measures of care of newborn described in our ancient texts indicate their wisdom regarding resuscitation, prevention of hypothermia, aspiration and infections and promotion of rooming in and early initiation of breast feeding. Though with the advent of newer scientific knowledge and technologies, this practice has become obsolete these days, yet an understanding of Navjata Shishu Paricharya proves it to be the foundation stone and base of neonatal care.

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