



## CONCEPTUAL STUDY OF THE EFFECT OF *MADHU* IN NEONATAL PAIN MANAGEMENT

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### ABSTRACT

New born under go various minor procedures like venipuncture for various purposes. The ability of neonates to perceive pain and to react is fully or nearly fully developed in the neonatal period as most of the anatomical pathways and neurotransmitter necessary for pain perception are developed. The prevention of pain is important not only because it is an ethical expectation but also because repeated painful exposures can have deleterious consequences. Procedural pain causes physiological changes in the body of a neonate, where an inflammatory response to the damaged tissues is initiated, while a stress response induces hormonal and metabolic changes affecting stability of the homeostasis.

An Ayurvedic approach should be considered in the field of *Kaumarbhritya* for *Vedanasthapan* in newborn as an alternative or better medicine than common available modern drugs.

According to Ayurveda, pain is initiated by *Vata* and activities of *Vata* are mainly perceived through *Rakta Dhatu* as illustrated in Charak Samhita. Thus any kind of *Aghat* will sensitize the pain perception via *Rakta Dhatu*.

*Madhu* a *Shonitsthapan* drug with *Sandhaniya* property is expected to reduce the *Raktadushti* and eventually reducing the pain perception.

This review is carried out with an aim to understand the pain perception mechanism in Ayurvedic principle and to formulate Ayurvedic management protocol. The presentation of neonatal pain management is critically reviewed from various database and classical texts.

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### INTRODUCTION

"Pain is valuable once you know you have learned from it." To cure sometimes, to relieve often, to comfort always", is a 15th century French description of the role of the physician. Although relief of pain is felt to be a cardinal principle of compassionate medicine, yet in practice, pain management is often an ignored aspect of neonatal care.

The International Association of the Study of Pain (IASP) defines that pain is "an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of damage". According to the IASP "pain is always subjective. Each individual learns the application of this word through experiences related to injury in early life." Thus it emphasizes the importance of early pain experiences in shaping the response to future pain.

Studies indicate a lack of awareness among health care professionals of pain perception, assessment, and management in neonates. When analgesics were used in infants, they often were administered based only on the perceptions of health care professionals or family

members. Fear of adverse reactions and toxic effects often contributed to the inadequate use of analgesics. In addition, health care professionals often focused on treatment of pain rather than a systematic approach to reduce or prevent pain. More recent surveys have demonstrated increased awareness among health care professionals of pain in neonates and infants and its assessment and management. Despite the advances in pain assessment and management, prevention and treatment of unnecessary pain attributable to anticipated noxious stimuli remain limited. Undermanaged pain in neonates leads to significant short- and long-term adverse consequences. Short-term consequences of painful procedures consist of decreased oxygen saturation, significantly lower partial pressures of oxygen, increased heart rate, increased HRV, rapid fluctuations in intracranial pressure, and increased levels of plasma cortisol, aldosterone, growth hormone, catecholamines, and glucagon.<sup>(1)</sup> Physiologic responses pose a problem for preterm neonates because these responses deplete the inadequate energy stores of the

preterm infant increasing the infant's chance of morbidity and mortality.

Physical and psychological stress increases the opportunity for infection through generalized depression of the immune system. A compromised immune system is a neonatal challenge because the immaturity of the neonatal immune system, the lack of immunoglobins, decreased energy reserves and limited to exposure to infectious agents are associated with an increased incidence of sepsis. Several important concepts must be recognized to provide adequate pain management for the preterm and term neonate.<sup>(2)</sup>

This review is carried out with an aim to understand the pain perception mechanism in Ayurvedic principle and to formulate Ayurvedic management protocol. The presentation of neonatal pain management

is critically reviewed from various database and classical texts.

**AIM**

Conceptual study of the effect of *Madhu* in Pain Management of newborn.

**MATERIALS AND METHOD**

The information about Concept of drugs Madhu in *Shonitsthapan Gana* is mentioned in Ayurvedic Samhitas Granthas. Whereas concept of *Vedana* is only described in Kashyap Samhita :Sutrasthan *Vedana Adhyay*. Kashyap samhita mentioned only *Lakshana* of *Vedana* related to *Balaka* only, but causes, *Samprapti* and treatment are not mentioned. We can consider causes, *Samprapti* according to modern science. The presentation of neonatal pain management is critically reviewed from various database and classical texts.

**DISCUSSION**

**Properties of Madhu<sup>(3)</sup>**

Drug	Rasa	Guna	Veerya	Karma	Rogagnata
Madhu	Kshaya, Madhur	Ruksha	Sheet	Lekhana, Sukshmamaryugami Cheddy, Vatakarak	Tridoshshamak, Chakshushya, Chedi, Trishanashak, Kapha Visha Hikka, Raktapitta, Kushtha, Prameha, Krumi, Vaman, Shwas, Kasa, Atisarashamak

According to Ayurveda Pain is initiated by *Vata* and activities of *Vata* are mainly perceived through *Rakta Dhātu* as illustrated in Charak Samhita Thus any kind of *Aghat* will sensitize the pain perception via *Rakta Dhātu*.

*Madhu* a *Shonitsthapan<sup>(4)</sup>* drug with *Sandhaniya* property is expected to reduce the *Raktadushti* and eventually reducing the pain perception.

New born undergo various minor procedure like venipuncture for various purposes. The ability of neonates to perceive pain and to react is fully or nearly fully developed in the neonatal period as most of the anatomical pathways and neurotransmitter necessary for pain perception are developed. The prevention of pain is important not only because it is an ethical expectation but also because repeated painful exposures can have deleterious consequences. Procedural pain causes physiological changes in the body of a neonate, where an inflammatory response to the damaged tissues is initiated, while a stress response induces hormonal and metabolic changes affecting stability of the homeostasis.<sup>(5)</sup>

Optimal pain management requires competent pain assessment, which can be especially difficult to perform in neonates. The pain-assessment tool used should be multidimensional, including measurements for both physiologic and behavioral indicators of pain, because neonates cannot self-report. Physiologic indicators of pain include changes in heart rate, respiratory rate, blood pressure, oxygen saturation, vagal tone, palmar sweating, and plasma cortisol or catecholamine concentrations. Behavioral indicators include changes in facial expressions, body movements, and crying, but these may be absent in some neonates

who are neurologically impaired or pharmacologically paralyzed. <sup>(6)</sup>The most commonly used assessment tools are PAT (Pain Assessment tool) and NIPS (Neonatal Infant Pain Scale).For each tool, the physiologic and behavioral indicators of pain are described, the population for which they have been validated are delineated, and unique aspects are listed.

Pharmacological agents are not used routinely to induce analgesia. 24% sucrose has been used successfully for neonatal analgesia in neonatal procedures. *Madhu* contains various carbohydrates and sucrose as one of them (1.3%). The total sugar content is around 78.1% as compared to routine sucrose solution used (24%).<sup>(7)</sup> It is thus expected that *Madhu* would act as a better pain soother/analgesia as compared to 24% sucrose.

**CONCLUSION**

Pain is experienced by every neonate. The number of painful stimuli may vary depending upon number of procedures performed. Optimal pain management requires competent and complete pain assessment, which is precisely difficult in children below 3 years of age. Facial expression, cry, tone/ position of the body, movement of extremities are the behavioral indicators of pain in neonates and infants as illustrated in *Kashyap Samhita Vedanaadhyaya*. Respiratory pattern, cardiac pattern and rhythm and Blood pressure are the main physiological indicators for assessment of pain in neonates and infants.

*Madhu* a *Shonitsthapan<sup>(4)</sup>* drug with *Sandhaniya* property is expected to reduce the *Raktadushti* and eventually reducing the pain perception. Honey

possesses antibacterial activity, anti-inflammatory activity and also speeds up healing of wounds.<sup>(8)</sup> Concerns of Botulism due to ingestion of Honey are theoretical and neonates can vary well tolerate Honey. Raw Honey should be used as told by Ayurveda. Pasteurized Honey is less acidic and therefore might exhibit less bactericidal activity. Honey can help in calming the neonates immediately after ingestion. This activity can be attributed due to sweet nature of Honey.

Thus, *Madhu* can be considered as an analgesic drug for procedural pain management of neonate and can be considered as a better option than commonly used analgesic drugs like 24% sucrose for analgesic effect.

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