AN AYURVEDIC ADJUVANT THERAPY OF NUTRITIONAL RICKETS: A CASE REPORT

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ABSTRACT
Rickets, a childhood ailment resulting from insufficient intake of Vitamin D, calcium, and phosphorus or difficulties in nutrient absorption, is characterized by inadequate bone calcification, leading to softening and deformities, often presenting as bow legs. Acharya Kashyap, renowned as the founding figure of Kaumarbhritya (Paediatrics) in Ayurveda, identified Phakka as a Kuposhanjnya Vyadhi, where children experience an inability to walk even after the age of one due to nutritional deficiencies and hindrances in the Rasa-Vaha Strotasa (nutrient absorption channels). This parallels rickets, suggesting a correlation between the two conditions. The case under discussion involves a 2-year-old girl child with bowed legs, brought by her parents to the Balroga Outpatient Department of Govt Ayurved College and Hospital in Nanded, where she was subsequently admitted for further management. Here, efforts were made to address her condition through Ayurvedic treatment approaches and supplementation with Vitamin D and calcium, yielding positive outcomes.

KEYWORDS: Rickets, Kaumarbhritya, Phakka, nutritional deficiency, Kuposhanjnya Vyadhi.

INTRODUCTION
The term Rickets originates from the English word "wrickken," meaning twist and Greek word rachitis (excess of ostoid tissue). It is a metabolic disorder that arises due to deficiencies in calcium or phosphorus, both crucial for bone mineralization. In countries like India, nutritional rickets, particularly stemming from vitamin D deficiency, is widespread, especially among dark-skinned infants exclusively breastfed for extended periods without
Factors contributing to vitamin D deficiency include poor dietary intake, inadequate sunlight exposure, malabsorption syndromes, chronic liver disease, and severe dietary calcium deficiency, resulting in skeletal deformities such as bow legs (genu varum) in toddlers, knock-knees (genu valgum) in older children, craniotabes (soft skull), spinal and pelvic deformities, growth disturbances, costo-chondral swelling (rickety rosary), Harrison groove, double malleoli due to metaphyseal hyperplasia, increased fracture susceptibility, bone pain or tenderness, muscle weakness, and dental issues.

Nutritional rickets typically manifests in infancy or early childhood, often presenting as widened wrists or bowed legs, with higher incidence between six months to two years of age, particularly prevalent in low socioeconomic conditions with inadequate dietary vitamin D. Ayurveda recognizes this condition as Phakka roga, classified under Kuposhanajanya vyadhi by Acharya Kashyapa, affecting children's bone development. Phakka roga is further categorized into three groups based on its causes: Kshiraja Phakka, Garbhaja Phakka, and Vyadhija Phakka.

Samprapti (disease's progression) involves Agni (digestive fire) disturbance due to various causative factors and malnutrition, impacting digestion, metabolism, and absorption processes, resulting in nutrient-deficient body tissues, leading to symptoms such as frequent watery bowel movements, increased urination, and improper utilization of food essence, ultimately leading to malnutrition and Phakka roga.

Kashyapa Samhita outlines various Ayurvedic therapies for Phakka Roga treatment, emphasizing normalization of Vata and Kapha doshas along with nutritional support.

Hence, combining Ayurvedic treatment modalities with Vitamin D3 and calcium supplementation has been found notably effective in alleviating the signs and symptoms of the disease.

MATERIAL AND METHODS

CASE REPORT

A 2 years old Female child belonging to Muslim community of middle-class family with no consanguineous marriage of parents was visited Balaroga OPD of Govt Ayurved College and hospital Nanded for having complaints of bowing of legs, frequently fall during walking of
some distance since walking milestone achieved. Antenatal and perinatal history was not any specific and birth history reveals full term normal delivery, cried after tactile stimulations with birth weight 2.5 kg. Child is immunised up to date and achieved developmental milestone normally but because of above mentioned complaints she was admitted in for further management in same institute.

CLINICAL FINDINGS
A. Anthropometry
- Height-77cm (<-2SD)
- Weight- 10kg(-1SD)
- HC- 43cm
- CC- 47cm
- MAC-12.5cm

B. On examination (lower limbs)
- Bowing of both lower limbs

C. General examination: Vitals were normal.

D. Systemic Examination
- RS- AE=BE, clear Bilateral chest movements equal.
- CVS- S1, S2 normal
- CNS- Conscious, oriented
- P/A- Soft and Non-tender, Peristalsis: Normal

E. Radiological Examination
- No any abnormality seen in both Wrist and both Ankle joint.

F. Lab Investigations
Sr. Calcium: 6.59 mg/d

G. Ashtavidha Pariksha,
1. Nadi (Pulse): Kapha-Vata
2. Mutra (Urine): Frequency and colour were normal.
3. Mala (Stool): Frequency and colour were normal
4. **Jivha (Tongue):** Sama (coated due to improper digestion).
5. **Shabda (Speech):** Understandable (Spashta)
6. **Sparsha (Touch):** Normal
7. **Druk (Eyes):** Normal
8. **Akruti (Appearance):** Madhyam (not too Lean not too obese body).

H. **Samprapti ghataka**
1. **Hetu** - Nutritional deficiency, Lack of sun exposure
2. **Dosha** - Vata, Kapha
3. **Dushya** - Rasa, Asthi (bone)
4. **Strotasa dushti** - Rasavaha, Asthivaha
5. **Strotodushti hetu** - Vimargagamana
6. **Adhishtana** - Asthi

**Diagnostic Assessment**
- By analysing clinical features, physical examination, laboratory and radiological investigations: Genu varum with nutritional deficiency.

**Table no. 1: Therapeutic intervention.**

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Day</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1-5</td>
<td>Deepana-Pachana</td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td>Snehana (Lower limbs massage) with lukewarm Chandana-Bala-Lakshadi Taila for (20 mins) twice a day for 25 days</td>
</tr>
<tr>
<td>3.</td>
<td>6-60</td>
<td>After a gap of 5 days whole cycle (Snehana and Swedana) was repeated again for next 25 days Administered</td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td>Vit D3 Sachet 6,00,000 IU Once a week for total6 weeks</td>
</tr>
</tbody>
</table>

**Advice**
1. **Aahara (Dietary advice):** Incorporate a variety of whole grains and legumes such as oats, barley, rice, black beans, and lentils, along with ample servings of green leafy vegetables like spinach and fenugreek. Additionally, include nourishing dry fruits like almonds, walnuts, cashews, and raisins, as well as fresh fruits like oranges, figs, and bananas, into your daily diet. [9]
2. Vihara (lifestyle modifications) involves obtaining moderate sunlight exposure, utilizing corrective braces, engaging in recreational activities with peers, and incorporating regular walking into one's routine.

**OBSERVATION AND RESULT**

Treatment was administered to the patient for 2 months, and examinations were conducted on the 30th and 61st days. Positive results were observed in the patient's signs and symptoms, and no other complications or side effects were noted during the treatment period. The parents reported that the child appeared happy, engaged in play with other children, and experienced a reduction in the frequency of falling.

**DISCUSSION**

1. According to Ayurvedic principles, correcting Jathara-agnimaandya (low digestive fire) is the first priority, for which Aamdo shantaka kwatha is recommended to enhance Deepana (appetizer) and Pachana (digestion) functions.

2. Snehana and Swedana therapies improve the musculoskeletal system, strengthen muscles, reduce weakness, and enhance joint flexibility.\[^{10}\]

3. Dashmoola dravya is an optimal combination of herbs for pacifying vitiated vata due to its Madhur rasa and Ushna Veerya properties, which play a crucial role in Phakka.

4. Additionally, calcium and Vitamin D3 supplementation are essential to cure nutritional deficiency.\[^{11}\]

**CONCLUSION**

According to modern science, nutritional rickets results from deficiencies in vitamin D, calcium, and phosphorus, which can be correlated with Phakka Roga, particularly Vyadhija Phakka, in Ayurveda. Nutritional insufficiency or malnutrition leads to Apatarpanajanya vyadhis, with Phakka Roga being one of them, characterized by weakened bony tissue due to impaired Rasa and Asthidhatu functions. Therapeutic approaches for treating Phakka roga in ayurveda include Nidana Parivarjana, administration of Deepana-Pachana drugs, Vitamin and Calcium supplements, and essential dietary and lifestyle changes, all of which helped reduce the duration of treatment in this case with positive results in sign and symptoms of disease.

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