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APPROACH TO GLOBAL DEVELOPMENTAL DELAY: A CASE REPORT

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ABSTRACT

Global developmental delay is when the child fails to attain development or has a notable delay in attaining childhood developmental milestones according to age. Global developmental delay is defined as a delay in 2 or more domains of growth in children less than 5 years of age. As per symptoms it can be considered as “Bala Samvardhana Vikara” wherein Vatavikruti is present and treatment like Snehana, Swedana, Shodana, and Brumhana can improve the condition. A female child of 16 months was brought to the outpatient department of Kaumarabhritya, Khemdas Hospital, Parul Institute of Ayurved and Research, Parul University, Vadodara with complaints of being unable to sit, stand, and walk with or without support, which is associated with unable to gain weight and use words. The child was treated with internal medication and externally by using Panchakarma procedures. Both before and after assessment were done and noticeable improvements have been observed. Only Ayurvedic management was done in this condition of global developmental delay. Ayurvedic management can be highly effective in the management of global developmental delay, thereby delivering a better prognosis.

Keywords: Ayurveda, global developmental delay, bala samvardhana vikara, panchakarma

INTRODUCTION

The physical, cognitive, and psychosocial changes occurring throughout the life span is referred to as Human development. These developments progress sequentially and independently over the time while also interacting with each other [1]. Children's growth and development is an ongoing, well-organized process. The pattern of development and growth is similar in all children, but the rate of development differs from one child to another [2]. Proper development and growth which is apt for the age are required to support brain development, physical health, cognitive development, emotional well-being, social skills, and educational progress. All the above-mentioned things aid in setting a strong foundation for their future wellness.

A developmental delay occurs when a child does not meet developmental milestones in comparison to other children of the same age [1]. Delay can be in any of the domains, such as fine and gross motor, speech and language development, cognitive development, social-emotional development, psychological, sexual, and activities of daily living. It can be isolated involving one domain, multiple involving two or more, or global impact which affects all developmental areas. Developmental delay can be further classified as mild (functional age < 33% below chronological age), moderate (functional age 34% - 66%

of chronological age), and severe (functional age < 66% of chronological age) [3]. A significant delay in two or more domains which are affecting the child's development under the age of 5 years is termed as developmental delay [4]. Physical growth plays an important role in the development of brain which in turn responsible for various functions. But more than that the influences of stimulation, social interaction, family, culture, and surroundings play a vital role in the child's recovery to maximum functionality. Development delays should be given serious consideration in today's life as they are societal and medical issues of a global trend.

As per WHO, 3.8% of Indians have developmental delay which accounts for 10% of the global population [5]. Early intervention is very helpful in promoting growth and development [6]. Late identification may lead to growth challenges later in life. Hence early diagnosis and regular rehabilitation of delayed developmental milestones is the key for optimal recovery. As per the symptoms such as mooka (dumbness), ashruti (deafness), pangu (lameness), jada (mental retardation) it can be considered as "Bala Samvardhana Vikara" which is characterized by an abnormality in development, where Vata Dosha is the major involvement [7-11].

Patients Information:

A female child of 16 months from Silota village, Alirajpur district, Madhya Pradesh was brought to the outpatient department of Kaumarabhritya, Khemdas Hospital, Parul Institute of Ayurved and Research, Ishwarpura, Vadodara, Gujarat by her parents with complaints of being unable to sit, stand or walk with and without support along with unable to gain weight and use words since birth.

Progress of disease:

The patient was a full-term normal delivery with a birth weight of 900 grams. The child did not cry immediately and hence she was admitted to the NICU and intubation was done. At the time of

pregnancy, the mother was diagnosed with jaundice and has taken medication. At the age of 5 months, the mother noticed a delay in neck holding, also the child is not sitting properly with or without support and is not able to pronounce words. The patient then approached the outpatient department of Kaumarabhritya, Khemdas Hospital, Ishwarpura, Vadodara, Gujarat, and was diagnosed as Global developmental delay.

Patient's history:

The patient had a history of physiological jaundice after birth. Details of the patient's history and family history are given in **Table 1**.

Table 1: Patient history

S. No.	Heading	Patient Details
1.	Past History	Suffered from jaundice after birth
2.	Family history	No H/o consanguineous marriage. All the family members are said to be healthy
3.	Immunization history	Immunized as per schedule till date
4.	Personal history	Sleep – Sound sleep Bowel – 2/day Micturition – 3-4/ day and 1-2/night Appetite – good

Examination:

The body vitals are depicted in **Table 2**, general examination in **Table 3**, and systemic examination in **Table 4**.

Table 2: showing patient's body vitals

1 st setting (02/02/24 to 16/02/24)	2 nd setting (18/03/24 to 01/04/24)
Height – 80 cm	Height – 80 cm
Weight – 9 kg	Weight – 11kg
Pulse – 80/min	Pulse – 78/min
RR – 20/min	RR – 18/min
Temp – 98 F	Temp – 97.8 F

Table 3: showing general examination

1 st setting	2 nd Setting
Attitude – supine position	Attitude – supine position
Built – poor	Built – moderate
Nutrition – poorly nourished	Nutrition – moderately nourished
Pallor – absent	Pallor – absent
Icterus – absent	Icterus – absent
Lymphadenopathy - absent	Lymphadenopathy - absent

Table 4: showing systematic examination

1 st setting	2 nd setting
Respiratory system – NVBS heard Cardiovascular system – S1 and S2 heard, no added sounds GIT – normal bowel sounds heard Musculoskeletal system: Flicker of contraction – grade 1 present Muscle power – grade 2 active movement with gravity eliminated Central nervous system – active, alert. Speech not attained to date. Reflex: Plantar reflex – diminished Knee jerk reflex - diminished	Respiratory system – NVBS heard Cardiovascular system – S1 and S2 heard, no added sounds GIT – normal bowel sounds heard Musculoskeletal system: Flicker of contraction – absent Muscle power – grade 3 active movement against gravity Central nervous system – active, alert. Speech not attained to date. Reflex: Plantar reflex – little improvement Knee jerk reflex – little improvement

Developmental milestones:

Gross motor and fine motor are depicted in **Table 5**. While language, social & adaptive are given in **Table 6**.

Table 5: showing gross motor and fine motor milestones

Gross motor	Attained age	Fine motor	Attained age
Neck holding	12 months	Bidexterous grasp	8 months
Rolls over	15 months	Unidexterous grasp	12 months
Sitting with mother's support	17 months	Immature pincer grasp	14 months
Sitting without support	18 months	Pincer grasp	17 months
Standing with support	18 months	Tower of 2 – 3 blocks	Not obtained
Standing without support	Not obtained		
walks	Not obtained		

Table 6: showing language, social & adaptive milestones

Language	Attained age	Social & Adaptive	Attained age
Alert to sounds	15 months	Social smile	15 months
Coos	17 months	Recognizes mother	15 months
Laugh loud	Not attained	Stranger anxiety	16 months
Mono syllable	Not attained	Waves bye bye	17 months
Bi syllable	Not attained	Indicating it wants	Not attained
Speaks 2 words	Not attained	Starts imitating mother	Not attained
Adds 2 or 3 words	Not attained	mimics	Not attained

Astavidha pariksha:

Nadi – Vata kaphaja

Mala – 2/day

Mutra - 3-4/day 1-2/night

Jihva – saama

Shabda – shpashta

Sparsha – anushna sheeta

Drik – prakruta

Akruti - madhyama

Dashavidha pariksha:

Prakruti: vata kapha

Samhanana: avara

Satmya: sarva rasa satmya

Ahara shakti: madhyama

Pramana: avara

Vikruti: vata

Sara: avara

Satva: madhyama

Vaya: bala

Diagnosis:

The assessment is done using the
Gross motor functional classification scale

(GMFCS), modified Ashworth scale (MAS) and clinical symptoms suggesting global developmental delay.

Acc. To Ayurveda:

According to the symptoms such as mooka (dumbness), ashruiti (deafness), pangu (lameness), jada (mental retardation) it can be considered as “Bala Samvardhana Janya Vatavikruti” which is a vata predominant condition.

Samprapti Ghataka:

Dosha: Tridoshaja vata Pradhana

Dushya: mamsa, asthi, majja, rasa, raktha, sandhi

Upadhatu: snayu, kandara, sira

Ama: sama

Srotas: rasa rakta, mamsa, asthi

Srotodushti: vimargamana, sanga

Udbhava sthana: amashaya

Agni: dhatuwagni and jatharagni

Srotas dusti prakara: sanga

Vyakta sthana: sarva sharira

Therapeutic interventions:

Treatment details are given in **Table 7 and 8** of Shamana and Brumhana chikitsa.

Table 7: Shamana Chikitsa

S. No.	Name	Dose and frequency	duration
1.	Syrup Shankapushpi	5ml twice daily after food	15 days

Brumhana Chikitsa

Table 8: showing treatment procedures

1 st setting	2 nd setting	Drugs used	Duration
Shirodhara	Shirodhara	Dasamoola kashaya	15 days each
Sarvanga abhyanga	Sarvanga abhyanga	Maha Narayana taila	15 days each
Nadi sweda	Nadi sweda	Dasamoola kashaya	15 days each
Pratimarsha nasya	Pratimarsha nasya	Anu taila	15 days each
Upanaha	Upanaha	Salavana Upanaha	15 days each
Shirothalam	Shirothalam	Rasna churna and Bramhi churna with Maha Narayana taila	15 days each
Matra Basti	Matra Basti	Maha Narayana taila	15 days each

OBSERVATION AND RESULTS:

The evaluation is conducted both before and after treatment using validated scales such as GMFC, and the modified Ashworth scale in the following **Tables 9, 10**. Prior to treatment, the patient was unable

sit with support, stand or walk with support, gain weight and use words. Now after treatment she can sit with and without support, stand with support, started to roll and started pronouncing mono syllable.

Table 9: Showing assessment and observations as per GMFC scales

Sl. No.	Name	Before treatment	After treatment (after 1 st setting)	After treatment (after 2 nd setting)
1.	Sitting	Grade 0 – does not sit at all	Grade 2 – sit with support	Grade 3 – sit with straight back
2.	Standing	Grade 0 – does not stand at all	Grade 1 – stand by holding furniture or hands	Grade 2 – takes few steps both hand hold
3.	Fine motor	Grade 1 – try to reach and holds things with crude methods	Grade 2 – try to reach and holds things with very good grip	Grade 3 – transfer objects from one hand to another hand

4.	Language	Grade 0 – does not use words	Grade 1 – mono syllable	Grade 1 – mono syllable
5.	Personal and social	Grade 2 – Recognizing mother	Grade 4 – Attachment to toy and cry when is taking away	Grade 5 – Resist when pulling the toy.

Table 10: Showing assessment and observations as per Modified Ashworth scale

Sl. No.	Before treatment	After treatment (after 1 st setting)	After treatment (after 2 nd setting)
1.	Grade 1+ – a slight increase in muscle tone, minimal resistance	Grade 2 – Increase in muscle tone through most of the range of motion, but the affected part easily move.	Grade 3 – Increase in muscle tone, but passive movement is difficult.

DISCUSSION:

Samvardhana Vikara [7] occurs with the pathologies like Dhatukshaya, sosha and masthiskaghata. Without swift and proper intervention, it can be a lifelong condition. If children are diagnosed earlier and given proper care, the developmental milestones might improve. Samvardhana vikara is a vata pradhana tridoshaja vyadhi [7], the tridosha gets vitiated and gets located in rakta srotas which in turn causes rukshata. Increased rukshata is the main cause of rigidity in the muscle and developmental delay. The Dasamoola Kashaya [12] used here for Shirodhara primarily works on vata dosha. It had balancing effect on Tridosha. It shows result in reducing problems of nerves, bones, muscles, joints, and inflammatory conditions. It reduces aggravation of vata dosa in the pelvis, bladder, kidney, bones, ears, and lower limbs which are all seats of vata dosha [13]. The ingredients of Maha Narayana taila used for Sarvanga abhyanga are beneficial in reaching deep into tissues which relives stiffness, and restricted moments [14].

The Anu taila [15] which was made use for pratimarsha nasya can be beneficial in preserving the health of all sense organs. It strengthens ears, eyes, nose, throat and tongue. It also possesses tridosha balancing effect. The procedure of Upanaha i.e, Salavana Upanaha sweda can quickly improve the strength of bones, muscles, and joints. If applied externally promote strength and pacify vata [16-17]. The Shirothalam [18] was applied with Rasna churna, bramhi churna along with Maha Narayana taila which can reach deep into tissues and thereby relieving stiffness and restricted moments. The Matra Basti [7] administered with Maharanayana taila has too showed beneficial effect in this case. The syrup Shankapushpi was advised internally which can improve cognitive processes, and brain activity [19].

CONCLUSION:

Since the present condition is difficult to cure, the improvements observed help the patient to live a much better quality of life. This case illustrates how Ayurveda can be beneficial in managing global developmental delays. Furthermore, it

signifies that the treatment based on Ayurvedic principles and panchakarma has an excellent hand in treating developmental delay.

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