

## CLINICAL EVALUATION OF PANCHAGAVYA GHRUTA INBALABUDDHI-MANDYA (MENTAL RETARDATION IN PAEDIATRIC AGE GROUP)

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### ABSTRACT

**Background:** Mental Retardation is defined as sub average general intelligence, manifesting during early developmental period. The child has diminished learning capacity and does not adjust well socially. **Objective:** The objective was to do a clinical evaluation of *PanchagavyaGhruta* in *Balabuddhimandya* (Mental Retardation in Paediatric age group) **Materials and Methods:** It is a randomized open interventional placebo controlled clinical trial. A total 22 patients were selected from the age group of 3 years to 9 years of age. The selected patients were randomly distributed into two groups. The patients in Group I (n =11) were given *GauGhruta* and patients in Group II (n = 11) were given *PanchagavyaGhruta*. Both the groups were studied for the period of 12 months to evaluate the efficacy of the drug. **Results:** In Group II, the IQ was increased by 36.36% which is statistically highly significant. **Conclusion:** *PanchagavyaGhruta* showed encouraging and promising results by significantly increasing IQ without any complication.

**Keywords:** Mental Retardation, *Bal Buddhimandya*, *PanchagavyaGhruta*, Mentally Challenged.

### INTRODUCTION

Mental Retardation (MR) is a serious and lifelong disability which burdens heavily on society and the health system. According to WHO, the prevalence rate of MR in industrialized countries is close to 3%.<sup>1-5</sup> Mental Retardation is a significantly sub-average general intellectual functioning resulting in or associated with concurrent impairments in adaptive behaviors and manifested during the developmental period. Mental Retardation is associated with beha-

vioral problems. Also, there could be associated psychiatric disorders. In *Ayurveda*, many psychological ailments are described, like *Apasmara*, *Unmada*, *Atatabhinivesha*; but very few references regarding *Buddhimandya* (MR) are available. It is not described as a special disease entity, but can be considered as Mental deficiency or Mental Retardation by the literal meaning of the term and clinical presentation. *AcharyaBhela* clearly mentions, *Bijadosha* (genetic fac-

tors of parents), *Apathya* (improper diet), *Vegadharana* and *Yonidosha* (suppression of natural urges) (gynecological disorders) as the causative factors for *Garbhavikruti* (fetal disorders).<sup>6</sup> *Acharya Sushruta* has mentioned *AdibalapravruttaVyadhi*; which are of two types *Matruja* (maternal) and *Pittruja* (paternal), which are derived from the manifestation of *Shukra* and *Shonita*;<sup>7</sup> respectively. Some references of *Buddhimandya* (MR) can also be seen in another group of disorders called as *JanmabalapravruttaVyadhi*. *Garbha* (fetus) is completely dependent upon its mother; so any change in mother's mental or physical state affects the *Garbha*; causing ailments.<sup>8</sup> They are of two types; *Rasakruta* and *Dauhridakcharkruta*. *RasakrutaVyadhi* is caused due to the vitiation of *Rasadhatu*. If *Rasadhatu* is impure; owing to the improper diet of mother; the whole chain of *dhatu* originating from *Rasadhatu* would be severely affected, precipitating many ailments. The basic function of *Rasadhatu* is *Preenana*,<sup>9</sup> i.e., giving nourishment to *Manas*. Due to the improper nourishment of *Manas* and *Indriyas*; derangement of *satta*, *Raja* and *Tama* occurs in *Manas*; resulting in many *Manasvyadhi*.<sup>10</sup> *Buddhimandya* may be the result of such causes. Every *Acharya* of *Ayurveda* has given immense importance to the *Dauhrida* phase of pregnancy. *Acharya Sushruta*, clearly states that, if mother's cravings are not fulfilled, she may deliver a baby suffering from many disorders like *Jadata* (Mental Retardation), Dwarfism; etc.<sup>12</sup> Latest Research work too underlines the importance of proper diet. Growing fetus needs non-essential amino acids; the deprivation of any one amino acid from the protein synthesizing substrate could retard the rate of protein

synthesis and thereby result in more or less failure of brain development during the period of its most rapid growth.<sup>11</sup> In the period of *Dauhrida*; not only cravings but stress factor is also very important. Mental stress any ways play a very vital role in the development of baby's brain throughout pregnancy, but it is of utmost importance during this phase. Chronic exposure to stress hormones, whether it occurs during the prenatal period, infancy or childhood has an impact on brain structures involved in cognition and mental health.<sup>13</sup>

## MATERIALS AND METHODS –

**Study design –** It is a randomized open interventional placebo controlled clinical trial. For this study total 22 patients were taken.

## SELECTION OF CASES

### Inclusion Criteria –

- Patients having Mild MR (IQ 50 to 70) and Moderate MR (IQ 35 to 55) were selected.
- Questioner carrying six questions was prepared according to the age. It is as follows.
- General information
- General comprehension
- Arithmetic
- Similarity
- Vocabulary
- Digit span
- Picture completion
- Picture arrangement

The first five tests were evaluated on the basis of answers given orally. The last two tests are concerned with the psycho motor skills of the subjects.

### Scoring of IQ–

$$IQ = MA / CA \times 100$$

Patients were selected from the age group of 3 years to 9 years of age.

#### Exclusion Criteria –

- Patients having severe MR (IQ 20 to 40) were rejected.
- Patients suffering from any other anomalies like CVS abnormalities, Genetic disorder, Tuberculosis etc were rejected.
- Patients not regular in the treatment were rejected.

#### TRIAL DRUG –

A classical preparation of medicated Ghee known as “PanchagavyaGhruta” or “LaghuPanchagavyaGhruta” was selected for the study. The reference was taken from *CharakSamhita*.<sup>14</sup>

#### CONTENTS OF PANCHAGAVYA GHRUTA

- *Gau* – *Shakrud Rasa* (Fresh cow dung juice)
- *Gau* – *Dadhi* (Cow milk curd)
- *Gau* – *Kshira* (Fresh cow milk)
- *Gau* – *Mutra* (Fresh cow urine)
- *Gau* – *Ghruta* (cow ghee)

All the five ingredients were taken in equal proportion. The *PanchagavyaGhruta* was prepared according to *GhrutapakaVidhi*.

**DOSAGE** – The advised dose was 10 ml / day. The drug was administered 15 mins before and after meals twice a day for 12

months. For *AnupanaKoshnaJala* was advised for all the patients.

#### GROUPING OF PATIENTS –

All the 22 patients, selected for the study were divided into two groups, namely Group I and Group II. The Group I and Group II were selected by simple random sampling technique.

#### GROUP I (ON GAU GHRUTA)

A total of 11 patients were in this group. They were administered *GauGhruta* along with luke warm water; 15mins before and after meals; twice a day; for 12 months. The dose was 10ml/day.

#### GROUP II (ON PANCHAGAVYA GHRUTA)

A total of 11 patients were in this group. They were given *panchagavyaghruta* in a dosage of 10ml/day; along with luke warm water 15mins before and after meals; twice a day; for 12 months.

#### CRITERIA OF ASSESSMENT

For the assessment of result, IQ was kept as a parameter. Wechsler Test was used to scale the intelligence and memory (cognitive domain). Adaptive skills of patients were tested using Vinland Adaptive Behaviour Scale. The observations found were recorded as results. The result was analysed by the following parameters.

Satisfactorily Improved	–	Improvement in IQ of more than 75%.
Moderately Improved	–	Improvement in IQ of more than 50% upto 74%.
Improved	–	Improvement in IQ of more than 25% upto 49%.
No change	–	No improvement in IQ or improvement upto 24%.

#### FOLLOW UPS

Both the groups were studied for 12 months. The IQ of each patient was calculated before the start of the study and after the completion of 12 months of trial period.

#### STATISTICAL ANALYSIS

All the observations obtained were analysed statistically and the inference was drawn according to the Mean, Median, SD, SEM and P value of the parameters. Test applied was one way ANOVA, i.e., kruskalwallies test with Dunn’s multiple

comparison test. It is anon parametric test, as data does not follow normal distribution of Gaussion curve. P value summary was taken by comparing with baseline before treatment values. (Abbreviations: SD = Standard deviation, SE = Standard Error, P

= Actual probability value, n = number of observations)

**OBSERVATIONS AND RESULTS**

After the study, observations found in both the groups were calculated statistically to find out the significance of result.

**TABLE1:** Distribution of patients in both Groups according to the degree of Mental Retardation.

Degree of Mental Retardation	Group I	Group II	Total	%
Border Line	5	4	9	40.90%
Mild	3	3	6	27.27%
Moderate	3	4	7	31.81%

**TABLE 2 :** Effect of treatment on IQ

	Mean		%	SD	d	T	p
	BT	AT					
Total Effect							
Group I	46.18	46.31	18.18	0.14	0.13	03.13	> 0.05
Group II	45.64	45.09	36.36	0.17	0.26	05.18	> 0.05
Borderline IQ							
Group I	78.33	78.44	27.27	0.09	0.11	03.90	> 0.05
Group II	79.00	79.16	45.45	0.10	0.16	05.08	> 0.05
Mild IQ							
Group I	63.33	63.04	27.27	0.07	0.08	04.02	> 0.05
Group II	62.00	62.15	45.45	0.09	0.15	05.32	> 0.05
Moderate IQ							
Group I	40.33	40.43	27.27	0.09	0.10	03.42	> 0.05
Group II	32.05	32.45	36.36	0.11	0.15	04.28	> 0.05

**TABLE 3:** Showing the distribution of cases according to the result obtained in Group I and Group II.

Result	Group I		Group II	
	No of cases	%	No of cases	%
Satisfactorily Improved	0	0	0	0
Moderately Improved	2	18.18	5	45.45
Improved	2	18.18	2	18.18
No change	7	63.63	4	36.36

It is observed that, in none of the Groups no patient was found to have satisfactorily improved according to the parameters of this study. In Group I, 2 patients showed Moderately improved result where as in Group II 5 patients showed this result,

giving an impressive result of 45.45% In Group I, 7 patients reported no change and in Group II only 4 Patients reported no change. In both the Groups 2 patients were observed to be improved.

In borderline IQ, Group I showed statistically significant ( $P > 0.05$ ) improvement at 27.27%. In Group II, IQ increased by 45.45% after the study; which is statistically highly significant.

When overall effect on IQ in Group I and Group II was studied it was found that Group I provided statistically significant ( $P > 0.05$ ) improvement (18.18% and in Group II the overall IQ was increased by 36.36%; which is highly significant.

## DISCUSSION

In the present study all the patients belonging to both the Group were assessed according to IQ scale by Wechsler Test and for adaptive skills; Vinland Adaptive Behaviour scale was used.

As per the observations in Group I, 45% patients showed improvement in concentration, 32% in orientation, 42% in consciousness, 45% in emotion, 27% in thinking, 45% in memory remote, 63% in memory recent, 54% memory immediate, 36% in perception, 28% judgement.

In Group II, it was observed that 72.72% patients showed improvement in concentration, 72% patients in orientation, 65% in consciousness, 63% in memory remote, 82% in memory recent, 72% in memory immediate, 61% in perception and 45.45% in Judgement. When the overall effect of therapy was observed it was found that Group II reported significant improvement.

## CONCLUSION

*Balbuddhimandya* (MR in Paediatric age group) is a good subject, with a vast potential, both clinically as well as literary. There is no direct reference in *Ayurvedic* classics regarding this ailment. Hence, it has a very wide horizon for research scholars to

explore. *Balbuddhimandya* is observed in all socio economical classes of the society. But, lower income group is found out to be the most affected followed by the middle income group. Poor hygiene during pregnancy, unhygienic–undernourished diet, economical burden, stress, physical labour, and exposure to various infectious diseases like STD could be the contributing factors.

Majority of the *Balbuddhimandya* patients were observed having low IQ, SQ, EQ.

*PanchagavyaGhruta* showed encouraging results in elevating IQ levels in *Balbuddhimandya* patients which was found out to be statistically significant.

Every component of *panchagavyaghruta* is easily available across India. Making this *ghruta* does not require great skills hence, can be made at home by everyone.

*PanchagavyaGhruta* significantly improved IQ in the study. It has shown improvement in other aspects of IQ and SQ like orientation, consciousness, Memory, Thinking, Concentration; etc. *PanchagavyaGhruta* can be safely given to patients of *Balbuddhimandya* (MR); without fear of any side effects.

## REFERENCES

1. WHO (1968) organization of services for the Mentally Retarded. Fifteenth report of the WHO Expert Committee on Mental Health. WHO Technical Report Series no 392. Geneva : World Health Organization.
2. Grossman H. J. editor. (1983) Classification in Mental Retardation. Washington: American Association on Mental Deficiency.
3. Stein Z, Susset M. (1984) The epidemiology of mental retardation. In : Butler

- N. R. cornel B. D., editors. Stress and Disability in childhood. The Longterm Problems (proceedings of the 34<sup>th</sup> symposium of the closton Research Society, University of Bristol, March 1982). Bristol : John Wright and Sons p 21 – 46.
4. Munro JD. (1986) Epidemiology and the extent of mental retardation. Psychiatric Perspectives on Mental Retardation, 9:591 – 624.
  5. Alberman E. (1987) Estimate of prevalence of mild mental retardation : Methodological aspects. Upsala Journal of Medical Science 44 (Suppl): 34-7
  6. BhelaSamhita, edited by Girijadayalu-Shukla, ChaukhambaBharati Academy Varansi, 2<sup>nd</sup> edition, Sharirsthana 3/2-7.
  7. SushrutaSamhita, edited by Dr. AmbikadattaShastri, ChaukhambaSanskritSamsthan, Varansi, 7<sup>th</sup> edition, Part I,Sharirsthana24/6.
  8. SushrutaSamhita, edited by Dr. AmbikadattaShastri, Chaukhamba Sanskrit Samsthan, Varansi, 7<sup>th</sup> edition, Part I, Sharirsthana 26/6.
  9. AshtangaHrudaya, Commentory by Dr. GopalKrushnaGadre, ShriGajanan Book Depot, Mumbai, 7<sup>th</sup> edition, Sutrasthana 11/4.
  10. CharakSamhita, commentary by Vd. SatyanarayanShastri, ChaukhambaBharati Academy, 22<sup>nd</sup> edition, Part I, Sharirsthana2/29.
  11. SushrutaSamhita, edited by Dr. AmbikadattaShastri, Chaukhamba Sanskrit Samsthan, Varansi, 7<sup>th</sup> edition, Part I, Sharirsthana 3/23-25.
  12. Bessman S. P., Williamson M. L., Koch R., Diet, genetics and Mental Retardation interaction between phenylketonuric heterozygous mother and fetus to produce nonspecific diminution of IQ : Evidence in support of the justification hypothesis, proc. Natl. Acad. Sci. USA. Vo -75, No. 3, pp. 1562 – 1566, March 1978.
  13. Sonia J. Lupien, Bruce S. McEwen, Megan R. Gunnar, Christine Heim., Effects of stress throughout the lifespan on the brain, behavior and cognition. Nature Reviews Neuroscience 10, 434 – 445 (June 2009) doi: 10. 1038/nrn 2639.
  14. Agnivesh, CharakSamhita, Hindi commentary by KashinathShastri and GorakhnathChaturvedi, ChikitsaSthanam10 :Ver 17. Varanasi :ChaukhambaBharati Academy; 1996. P. 332.

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