

RESEARCH ARTICLE

Human constitutional types of Ayurveda and its relation with hematological parameters in infants

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ABSTRACT

Background: Ayurveda is one of the oldest health-care systems in the world with the key fundamental concepts of *Prakriti* (body constitution) based on the theory of *Tridosha*. In the present scenario, evidences are being generated to interrelate the concepts of *Tridosha* and *Prakriti* with various biochemical variables, chronic diseases, and genotypic variations. However, no studies are done in infants relating *prakriti* to blood cell count. **Aims and Objectives:** This study aims to explore a possible relation between *prakriti* (body constitution) and hematological parameters in infants. **Materials and Methods:** A total of 70 indoor infants were registered and their *prakriti* was assessed using prototype research software relevant to infants' *Prakriti* assessment software at the time of registration and on subsequent three follow-ups till 6 months of age. Blood investigations such as hemoglobin (Hb), total leukocyte count (TLC), differential leukocyte count (DLC), platelet (PLT) count, and total red cell count (TRBC) were carried out in all the registered infants after 72 h of birth. The obtained hematological values were studied in relation with their *prakriti*. **Results:** The results of this study showed variation in mean values of these hematological parameters as per *prakriti*, but no statistically significant association was found on intergroup comparison. **Conclusion:** The present study has not shown significant values, on intergroup comparison, of Hb, TLC, DLC, TRBC, and PLT count in relation to *prakriti* of infants. However, a study on a larger sample size in infants is required to draw final conclusion.


KEY WORDS: *Prakriti*; *Doshas*; *Vata*; *Pitta*; *Kapha*; Infants; Hematological Parameters

INTRODUCTION

Ayurveda, the traditional medical system of India, considers holistic principles which emphasize on health promotion, disease prevention, and early diagnosis and treatment of diseases in highly personalized manner.^[1] No two persons are alike; every individual is unique having different body

constitution.^[2] Hence, the unique concept of *Prakriti*, based on theory of *Tridosha*, namely *Vata*, *Pitta*, and *Kapha*, has been described in Ayurveda that underpins all understanding of human physiology and treatment of disease in highly individualized manner.^[3]

Prakriti, the distinct psychosomatic constitution of an individual^[4] forms the genetic and epigenetic basis of an individual morphological and biological specification.^[5] As per genetic peculiarity determined at the time of conception depending on the relative proportion of one or more *dosha* (humor) under the influence of immediate environmental factors including maternal diet and lifestyle,^[6,7] an individual becomes distinct in terms of its physical appearance, behavior, and physiology.^[5]

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Although wide variability exists between two individuals, Ayurvedic texts have categorized the baseline phenotypic variability into seven possible constitutional types, namely *Vataja* (V), *Pittaja* (P), *Kaphaja* (K), *Vata-Pittaja* (VP), *Vata-Kaphaja* (VK), and *Kapha-Pittaja*.^[8] The *prakriti* assessment is achieved through querying different physical, physiological, and psychological attributes.^[9]

The recent advances in the genomics, personalized medicine, and Ayurveda have led several researches to explore relationship between *prakriti* and various biological parameters. Different researchers have suggested a link between an individual's *prakriti* with biochemical and genetic variables.^[6,9,10-12] However, no study has demonstrated possible relationship between constitutional types and blood cell counts in infants to the best of our knowledge. Therefore, the present study was taken up to understand the relation between *prakriti* of infants and hematological parameters.

MATERIALS AND METHODS

The present study was conducted after getting approval from the Ethical Committee (ECC No. 2014-15/EC/1338), Institute of Medical Sciences, Banaras Hindu University, Varanasi, to evaluate different *prakriti* infants. A total of 70 indoor infants were randomly selected in the study within 3 days of birth, irrespective of socioeconomic status. and religion.

Written informed consent was obtained from the parents after considering inclusion and exclusion criteria. Inclusion Criteria

Healthy indoor baby irrespective to sex was registered after birth.

Exclusion Criteria

Infants having abnormal perinatal history such as abnormal gestational maturity, low birth weight (LBW), and very LBW or suffering with any congenital birth defects or any systemic disorder.

Prakriti Assessment

All the selected infants were assessed at registration and on subsequent follow-ups up to 6 months for determining their *Prakriti* by prototype research software relevant to infants' *Prakriti* assessment (PRS-IPA) software^[13] which is based on the *Doshika* characteristics mentioned in different Ayurvedic texts. The *Prakriti* was determined on the basis of predominance of one or more *doshas* into seven constitutional types.

Hematological Test

The blood sample was drawn from the selected infants after 72 h of birth through peripheral vein puncture and specimen was

collected in tube containing K₂EDTA and complete blood count was estimated by Automated Hematology Analyzer pocH-100i of Sysmex (Japan). Hemoglobin, total red cell count (TRBC), total leukocyte count (TLC) with differential leukocyte count (DLC [neutrophil, lymphocyte, monocyte, eosinophil, and basophil]), and platelet (PLT) count data were collected.

Statistical Analysis

The mean \pm standard deviation was computed for the hematological values reported as ranges. The analysis of data was carried out using statistical software SPSS 16.0 version. One-way ANOVA test was used for comparison between *prakriti*.

RESULTS

Of total 70 cases, 36 were male while 34 were female. 80% of infants were delivered by cesarean section and 20% were delivered by spontaneous vaginal delivery. The infant constitutional types (*prakriti*) determined using PRS-IPA software were categorized into six *prakriti* instead of seven types of *prakriti* as no infant of *Sama* or *Sannipataja prakriti* was found. As per *prakriti* maximum infants belonged to *Pitta-Kaphaja prakriti* followed by *Kapha prakriti* and then *VK prakriti*, whereas minimum infants were of *Vataja prakriti* [Figure 1].

15, 36, and 19 infants belonged to lower, middle, and high socioeconomic status, respectively. Among all socioeconomic status, maximum infants were of *Pitta-Kaphaja prakriti* while minimum infants of high socioeconomic status were of *Pitta* and *VP prakriti*. Minimum infants in low and medium socioeconomic status were of *Vataja prakriti* [Table 1].

In the present study, higher mean hemoglobin level (16.600 ± 2.615) was found in infants of *Vataja prakriti*, but on intergroup comparison, increased level of hemoglobin was not found significant. Similar intergroup findings ($P > 0.05$)

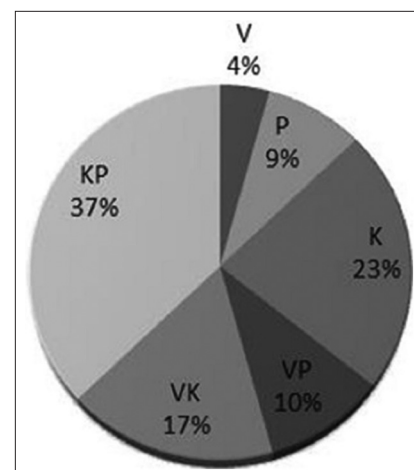


Figure 1: Pie chart showing the *prakriti* distribution in infants

for TLC, TRBC, and PLTs are also observed in infant of all *prakriti* groups in spite of variation in mean score [Table 2].

Mean percentage of neutrophils, lymphocytes, monocytes, and eosinophils counts was observed higher in *Vataja prakriti* (42.00 ± 12.490), *Pittaja prakriti* (52.33 ± 9.953), *V. prakriti* (12.43 ± 4.276), and *V. prakriti* (4.50 ± 3.253), respectively. On intergroup comparison, this difference was not found significant in infants of any *prakriti* [Table 3].

DISCUSSION

The present study has not shown significant values, on intergroup comparison, of hemoglobin (Hb), TLC, DLC, TRBC, and PLT count in relation to *prakriti* of infants. However, our results showed variation in mean values of hematological parameters as per *prakriti*.

Ayurveda describes *Tridosha* (three humor) as the basic physiological denominator of body^[14] with each *dosha* having specific attributes and is also responsible for deciding the bodily constitution of an individual depending on their preponderance.^[3,15] *Vata dosha* controls forces of movement in the body and mind; *Pitta dosha* for metabolic activities including cellular or subcellular metabolism while *Kapha* controls the anabolic forces and is responsible for growth and maintenance of structures, storage, and stability.^[4,12] The humoral constitution of a person is basically determined by genetic variation of different humors (*doshas*) in the body but that occurs within physiological limit.

Ayurveda explains the bodily response and susceptibility of individuals with different *prakriti* to various diseases.^[16-18] *Prakriti* is the basic clinical tool that helps in adopting personalized approach and guides primary prevention, diagnosis, and treatment of diseases.^[19,20]

Table 1: Percentage distribution of infants according to socioeconomic status

Socioeconomic status	V (n=3)	P (n=6)	K (n=16)	VP (n=7)	VK (n=12)	KP (n=26)
Low (n=15)	33.33	33.33	12.50	28.57	25.00	19.23
Middle (n=36)	66.67	50.00	56.25	57.14	50.00	46.15
High (n=19)	0.00	16.67	31.25	14.28	25.00	34.61

VK: *Vata-Kaphaja*, KP: *Kapha-Pittaja*, VP: *Vata-Pittaja*

Table 2: Intergroup comparison of hemoglobin (g/dl), TLC, TRBC, and PLT count groups in infants according to their *Prakriti*

<i>Prakriti</i> (n=70)	Hb (g/dl) (mean±SD)	TLC (per mm ³) (mean±SD)	TRBC (×per mm ³) (mean±SD)	PLT (per mm ³) (mean±SD)
V (n=3)	16.600±2.615	7476.670±1846.248	4.313±0.8708	2.876±1.053
P (n=6)	15.917±2.135	10700.000±2684.750	4.455±0.645	2.095±0.706
K (n=16)	16.400±2.049	8988.820±2401.301	4.715±0.764	2.468±0.770
VP (n=7)	15.943±1.069	9234.29±3301.292	4.703±0.485	2.385±0.953
VK (n=12)	15.483±1.664	9892.500±3909.913	4.367±0.547	2.896±0.926
KP (n=26)	16.092±1.429	11100.000±2872.113	4.626±0.446	2.532±0.678
Comparison between <i>Prakriti</i> (one-way ANOVA)	F=0.476 P=0.793	F=1.712 P=0.145	F=0.753 P=0.587	F=1.055 P=0.394

TRBC: Total red cell count, TLC: Total leukocyte count, Hb: Hemoglobin, PLT: Platelet, VK: *Vata-Kaphaja*, KP: *Kapha-Pittaja*, VP: *Vata-Pittaja*

Table 3: Intergroup comparison of DLC in healthy infants according to their *prakriti*

<i>Prakriti</i> (n=70)	Mean±SD			
	Neutrophil	Lymphocyte	Monocyte	Eosinophil
V (n=3)	42.000±12.490	45.670±8.737	9.330±4.933	3.000±3.464
P (n=6)	33.67±9.791	52.330±9.953	10.830±1.472	3.000±1.265
K (n=16)	40.290±11.628	44.760±11.638	10.290±4.283	3.760±2.333
VP (n=7)	38.570±11.473	44.290±10.874	12.430±4.276	4.50±3.253
VK (n=12)	39.670±14.606	46.750±13.060	9.080±4.231	3.73±3.036
KP (n=26)	38.560±10.108	48.520±11.173	10.400±2.739	4.12±2.068
Comparison between <i>Prakriti</i> (one-way ANOVA)	F=0.355 P=0.877	F=0.565 P=0.727	F=0.825 P=0.537	F=0.386 P=0.857

DLC: Differential leukocyte count, SD: Standard deviation, VK: *Vata-Kaphaja*, KP: *Kapha-Pittaja*, VP: *Vata-Pittaja*

Ayurveda suggests that differences in individual immune responses depend on *prakriti* of the individual.^[14,21] *Kapha* individual is supposed to have strong immunity, *Pitta prakriti* having marked tendency to develop bright red hypersensitivity and low immunity in *Vata* relative to *Kapha* individuals.^[14]

According to modern science, the immune response is produced by collective and coordinated actions of the immune cells in circulation and in tissues, but the extent of response varies among individuals depending on the number of factors.^[22]

In the present study, variation in mean values of various hematological parameters as per *prakriti* has been found. The incidence of Hb was found maximum in *Vataja* individual which is in contrast with the study conducted by Prasher *et al.*^[9] Another study carried out by Tripathi *et al.* reported significant variation in Hb g% between *Vata* versus *Pitta* and *Vata* versus *Kapha prakriti*,^[23] but in our study, no significant variation was found on intergroup comparison. The difference in findings of Hb g%, RBC counts, etc., with the former studies might have been attributed due to small sample size ($n = 70$) of the study.

CONCLUSION

In the absence of any previous work with respect to *prakriti* and blood cell count, we have for the 1st time shown the differences in the blood cell counts in infants. We found in our observational study in healthy infants that hematological parameters differed according to *prakriti*, but it was not found statistically significant. However, these findings need to be confirmed in a larger sample size.

REFERENCES

1. Roberti di Sarsina P, Alivia M, Guadagni P. Traditional, complementary and alternative medical systems and their contribution to personalisation, prediction and prevention in medicine-person-centred medicine. *EPMA J* 2012;3:15.
2. Mahalle NP, Kulkarni MV, Pendse NM, Naik SS. Association of constitutional type of ayurveda with cardiovascular risk factors, inflammatory markers and insulin resistance. *J Ayurveda Integr Med* 2012;3:150-7.
3. Jayasundar R. Ayurveda: A distinctive approach to health and disease. *Curr Sci* 2010;98:908-14.
4. Sethi TP, Prasher B, Mukerji M. Ayurgenomics: A new way of threading molecular variability for stratified medicine. *ACS Chem Biol* 2011;6:875-80.
5. Rastogi S, editor. Evidence-Based Practice in Complementary and Alternative Medicine. Part II. Heidelberg: Springer-Verlag Berlin; 2012. p. 33-49.
6. Bhalerao S, Deshpande T, Thatte U. Prakriti (ayurvedic concept of constitution) and variations in platelet aggregation. *BMC Complement Altern Med* 2012;12:248.
7. Hankey A. The scientific value of ayurveda. *J Altern Complement Med* 2005;11:221-5.
8. Sharma PV. Sushruta Samhita of Susruta, Sharir Sthana. Vol. 3. Varanasi: Chowkhamba Orientalia; 2014. p. 61-2.
9. Prasher B, Negi S, Aggarwal S, Mandal AK, Sethi TP, Deshmukh SR, *et al.* Whole genome expression and biochemical correlates of extreme constitutional types defined in ayurveda. *J Transl Med* 2008;6:48.
10. Bhushan P, Kalpana J, Arvind C. Classification of human population based on HLA gene polymorphism and the concept of prakriti in ayurveda. *J Altern Complement Med* 2005;11:349-53.
11. Patwardhan B, Bodeker G. Ayurvedic genomics: Establishing a genetic basis for mind-body typologies. *J Altern Complement Med* 2008;14:571-6.
12. Aggarwal S, Negi S, Jha P, Singh PK, Stobdan T, Pasha MA, *et al.* EGLN1 involvement in high-altitude adaptation revealed through genetic analysis of extreme constitution types defined in ayurveda. *Proc Natl Acad Sci U S A* 2010;107:18961-6.
13. Srivastava N. Basics for the development of prototype research software relevant to infants' prakriti assessment for vikriti management and possible future disorders. *Int J Res Ayurveda Pharm* 2017;8 Suppl 1:57-63.
14. Rotti H, Guruprasad KP, Nayak J, Kabekkodu SP, Kukreja H, Mallya S, *et al.* Immunophenotyping of normal individuals classified on the basis of human dosha prakriti. *J Ayurveda Integr Med* 2014;5:43-9.
15. Jayasundar R. If systems approach is the way forward, what can the ayurvedic theory of tridosha teach us? *Current Sci* 2017;112:1127-33.
16. Hankey A. A test of the systems analysis underlying the scientific theory of ayurveda's tridosha. *J Altern Complement Med* 2005;11:385-90.
17. Dey S, Pahwa P. Prakriti and its associations with metabolism, chronic diseases, and genotypes: Possibilities of new born screening and a lifetime of personalized prevention. *J Ayurveda Integr Med* 2014;5:15-24.
18. Hankey A. Ayurvedic physiology and etiology: Ayurvedo amritanaam. The doshas and their functioning in terms of contemporary biology and physical chemistry. *J Altern Complement Med* 2001;7:567-74.
19. Patwardhan B. Bridging ayurveda with evidence-based scientific approaches in medicine. *EPMA J* 2014;5:19.
20. Gupta P. Pharmacogenetics, pharmacogenomics and ayurgenomics for personalized medicine: A paradigm shift. *Indian J Pharm Sci* 2015;77:135-41.
21. Sharma RK, Dash B. Caraka Samhita of Agnivesa, Vimansthana. Vol. 2. Varanasi: Chaukhamba Sanskrit Series Office; 2010. p. 262.
22. Parkin J, Cohen B. An overview of the immune system. *Lancet* 2001;357:1777-89.
23. Tripathi PK, Gehlot S. Variations in physiological parameters in concordance with constitutional type of ayurveda. *Int J Ayurveda Med Sc* 2016;1:92-6.

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