



Review Article

SEVERE COMBINED IMMUNE DEFICIENCY- AN AYURVEDIC ASPECT WITH REFERENCE TO ANUVANSHIK VYADHI AND OJA KSHAYA

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ABSTRACT

The bubble boy disease is also known as SCID (Severe Combined Immune Deficiency) is a very rare genetic disorder, affects approximately 50-100 children in the United States every year. In India, before 2000 no case of SCID is diagnosed which is due to lack of awareness and diagnostic facilities. A steady increase in the number of diagnosed cases was found in India over the last 8 years. SCID is also known as Swiss-type Agammaglobulinemia which is characterized by disturbed development of B cells and T cells resulting in a weak immune system and recurrent infections. In Ayurveda, as such, no disease is compared with SCID, but it can be correlated with Anuvansik Vyadhi or Sahaja Vyadhi i.e., inherited disorder which results in Sahaja Oja Kshaya (primary immune deficiency). Aim: The present study aimed to understand the Ayurvedic perspective of SCID with reference to Anuvanshik Vyadhi, Oja Kshaya, and its probable treatment as per Ayurveda. Materials and methods: Brahitri, Laghutrayi, Nighantus, and various databases like Google Scholar, PubMed, DHARA, Scopus, Science Direct were searched with research papers that help to co-related SCID in Ayurvedic perspective and to understand its cause, treatment as per Ayurveda. It was found that SCID is a primary immunodeficiency disorder that is very severe that occurs due to mutation in ten different known genes and results in a highly compromised immune system that is considered almost absent. This bubble boy disease is considered fatal without corrective gene therapy or stem cell transplant according to modern perspective but with a proper understanding of the cause and symptoms of SCID, the Ayurvedic line of treatment can give miraculous results in SCID. Conclusion: SCID is Anukata Vyadhi as per Ayurveda, but with the use of various Ayurvedic lines of treatment like Shodhana (purification therapy), Suvarna Prashan, various herbs, SCID diseases can be prevented from occurrence and help to improve the quality of life of people suffering from SCID.

INTRODUCTION

Today there are drastic changes in our lifestyle, environment, dietary habits, etc. which result in the introduction of new pathogens, genetic mutations, imbalance in various hormones in mankind. Ayurveda is an ocean of knowledge and due to which it is not possible to name every disease, but our Acharyas had

a vision for a newly formed disease that was not mentioned in Samhitas. The concept for such kind of disease is known as Anukat Vyadhi. SCID (severe combined immune deficiency) is one such kind of disease that is not mentioned in Ayurvedic classics, but its cases are increasing throughout the world with time. Although the incidence rate of cases of SCID is 1 in 50,000-100,000 live births [1] recent data shows that in countries with high consanguinity rates SCID cases are as high as 1 in 3000 live births [2]. In India due to lack of diagnostic facilities and awareness cases of SCID remains undiagnosed for so many years. In 2001, the first case of SCID was diagnosed in PGIMER, Chandigarh, North India, after that until 2011 only 14 cases were diagnosed. But there is an exponential rise

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seen in cases of SCID after 2013, this is the result of the expansion of diagnostic facilities for paediatric immunology and manpower sources. The survey revealed that approximately 257 patients were diagnosed in India, with SCID up to June 2020 but this number is expected to be higher because diagnosis is still missed in 93% of children due to unawareness.^[3] In India incidence of autosomal recessive form of SCID is more than X-linked SCID and intra-caste marriage is surveyed to be responsible for such kinds of cases.^[3] SCID is considered as a medical emergency due to repetitive severe infection which can be fatal, it's a need of the hour that SCID should be better under on Ayurvedic perspective and its cure should be found as per Ayurveda to increase the option of treatment and make better qualitative life for people suffering from this rare disease.

MATERIALS AND METHODS

Classical texts books such as *Charaka Samhita*, *Susruta Samhita*, *Astanga Sangreha*, *Bhava Prakasha*, *Sharangdhar Samhita* and *Nighantus* (Sanskrit glossary) *Bhava Prakash Nighantu*, *Raj Nighantu*, *Yogratnakar*, *Bhaishhya Ratnavali*, etc were reviewed to co-relate SCID in Ayurvedic perspective along with its probable treatment, *Pathya*, and *Apathya*. Different databases such as Google Scholar, PubMed, DHARA, Scopus, Science direct were searched using keywords like SCID, bubble boy disease, genetics, primary immunity, *Anuvanshik Vyadhi*, *Oja*, *Oja Kshaya*, *Sahaja Vyadhi*, *Beeja Dusti*, *Amalaki*, *Tulsi*, *Mulethi*, *Suvarna Prashana*, etc with the help of Boolean operators "AND," "OR" and "NOT." Filters like free full texts and survey, research were applied. In the research paper, find out in the above-mentioned databases SCID is reviewed in detail.

DISCUSSION

Why Known as Bubble Boy Disease?

Due to negligible immunity, children suffering from this disease are extremely vulnerable to infectious disease and due to this few of them have to live in totally sterile environments. The child born in 1971, David is famous for living in such an environment i.e., inside the bubble. Therefore Severe combined immune deficiency is known as bubble boy disease.

Ayurvedic Concept

In Ayurveda, the concept of *Anukata* is found in *Atidesh Tantrayukti* and *Arthpatti Tantrayukti* that helps in the clarification of hidden, unsaid, and unheard things^[4] and this is one of the many basic principles of Ayurveda that is applicable in the current time. Along with understanding the basic concepts of Ayurveda it also helps to understand the unsaid or new emerging diseases.

Ayurvedic concepts that can be applied for understanding SCID

1. **Understanding of SCID as per Ayurveda:** As per modern perspective SCID is a primary immune deficiency disorder in which there is inherited flaws in the immune system which results in recurrent infections and if we study the Ayurvedic perspective according to *Acharya Charaka* (father of medicine), in each person *Vata*, *Pitta*, *Kapha* i.e., *Tri-Dosha* lives in a harmonious state and these *Tridosha* form *Prakriti* in every-one at the time of fertilization. *Tri-Dosha* having contradictory properties they never destroy each other; this is due to *Sahaja Satmayata* i.e., natural wholesome disposition of coexistence.^[5] When this *Sahaja Satmayata* is affected due to *Beeja Dosha* (mutation in genetic material) it results in primary immune diseases development that passes from generation to generation which is clarified by *Acharya Charaka* concept that says that there are six types of *Prakriti* i.e., genotype and phenotype Characteristic in *Indriya Sthana* and *Kulparsakta* is one of them which states that traits pass from one generation to another.^[6] Therefore, as per Ayurveda SCID can be considered as *Anuvanshik/Aadibala Pravrit/Kulaj Vyadhi/ Sanchari Vyadhi/ Prakriti Bhava Vyadhi* (inherited) disorder due to vitiation in *Sahaja Satmayata* results in *Sahaja Oja Kshaya* (primary immune deficiency).

According to above mention concept SCID can be named "Sahaja Asatmayata Oja Kshaya" (SAOK).

2. **Nidana of SCID as per Ayurveda:** As per *Nidana Anukata* concept of Ayurveda whenever specific *Nidana* (causes) of any disease are not mentioned then general *Nidana* (causes) can be considered.^[7] So till now as we know that SCID is *Anuvanshika* or *Sahaja Vyadhi* (inherited or genetic disorder), so general *Nidana* (causes) of *Anuvanshik Vyadhi* can be considered as *Nidana* (Cause) of SCID.

So *Nidana* (causes) of SCID are as follows:^[8,9]

- *Beej Dushti* (mutation in chromosomes)
- *Beej Bhag Dushti* (mutation in genes)
- *Beej Bhaj Avayava Dushti* (mutation infraction of part of a chromosome)
- *Tulya Gotra Vivaha* (Marriage in the same clan)
- *Daivik Bhava* (unknown factors or past deeds are a causative factor of *Karmaj Vyadhi*)^[10]
- *Svabhavik Karana* (autoimmune reactions like genetic, immunological, etc)
- *Douhridyani Avmanana* (if pregnant women wish for a specific food, visit a special place, etc are not granted but always care must be taken wishes that

are harmful to pregnant ladies and their foetus should not be granted.)

According to *Acharya Susruta*, Disease has been classified into seven types and one of them is in *Aadibala Pravrita* i.e., inherited disorder that occurs due to abnormalities in *Shukra* (semen) and *Shonit* (ovum). These *Adibala Pravrit Vyadhi* are further due to *Matraj* or *Pitraj Bhava Dushti* i.e., derived either from mother or father.^[11]

3. **Symptoms of SCID as per Ayurveda:** According to *Acharaya Vagbhata* *Dosha* is *Samvayi Karana* (inherent or intimate inseparable union by which effect is produced) of *Vyadhi* (diseases) therefore, *Lakshana* (symptoms) appear in the body as per *Dosha* vitiation i.e., increase or decrease in *Dosha*.^[12] In Ayurveda SCID, symptoms are not given but we know that *Anuvanshik Vyadhi* is due to *Sahaja* (inherent) vitiation in *Tridosha*. So, symptoms can be as per *Dosha* involved which results in inherent *Oja Kshaya*.

So, as per Ayurveda symptoms of SCID are: ^[13,14,15]

- *Durbala Abhikshana* (General debility)
- *Vyathit Indriya* (impairment of sensory and motor organs)
- *Ruksha Tvak* (dry skin)
- *Kshama* (blackish discoloration of the body)
- *Varna Bheda* (change in normal coloration)
- *Dosha Chayvana* (*Dosha* vitiated from their location and create disease in the place where they lodged i.e., *Kha Vaigunya*)
- *Mansa Kshaya* (emaciation or weight loss)
- *Moha* (giddiness)
- *Marana* (death)

Symptoms can vary as per *Dosha* involved and *Beej Dushti* involved.

Chikitsa (treatment) of SCID as per Ayurveda: *Acharya Vagbhata* had mentioned that when treatment for any disease is not mentioned then treatment can be done by taking self - decision with the use of *Yukti* (expertise/skill).^[16]

So probable treatments that can be applied in SCID cases are as follows:

- *Nidana Parivarjana* (avoiding the cause)- As per survey and research *Tulya Gotra Vivaha* (marriage in the same clan, caste, etc) is found to be linked with SCID disorder. So by avoiding *Tulya Gotra Vivaha* especially if SCID is in the genes, one can

avoid this disease being transferred to the next generation.

- SCID is an inherited disorder that passes from generation to generation. So, treatment before conception is necessary. Four components i.e., timing (*Ritu*), the field (*Kshetra*), fluids and nutrition (*Ambu*), and the seed (*Bija*) plays an important role in conceiving.^[17] So if they are healthy that may reduce the chances of such kinds of disorders.

Ayurvedic line of treatment before conception that helps to rectify *Beej Dushti* are as follows:

- *Shodhana* therapy i.e., purification therapy for females i.e., *Beej Shodhana* and male i.e., *Shukra Shodhana*.
- *Madhur Aushadhi*- Use of herbs that consist of *Madhura Rasa* (sweet taste), *Sheeta* (cold) *Virya* (potency).
- *Ghrita Ksheera* use for male.
- *Taila Masha* use for female.

Ayurvedic line of treatment that can be used in newborns and infants:

Suvarna Prashana: *Suvarana Prashana* is well mentioned in Ayurvedic texts as an immune booster used in paediatrics. It acts as an immunity booster as it makes infants, toddlers resistant to various infections and also includes the capacity of resistance to the offspring of the next generation.^[18] Recent researches have proved that gold has an immunomodulatory effect against various organisms and possesses anti-inflammatory, anti-bacterial, anti-cancerous properties.^[19] Recent researches have proven that the administration of *Suvarna Prashana* for up to 6 months will increase the immunoglobins i.e., IgA, IgM, IgG, etc, and also helps to reduce the severity, intensity of disease in children.^[20]

The treatment used in various ages for improving the life of a patient with SCID:

Rasayana Chikitsa: 34 *Rasayana* herbs and 68 non-*Rasayana* herbs are there that possess anti-inflammatory, anti-viral, anti-bacterial, immune-modulator, immune-stimulant properties and can be given to a patient with SCID to not only improve quality of life but also to decrease the chances of recurrent infection. These herbs can be used by *Vaidya* by properly examining the *Dosha* involved in symptoms related to SCID patients.

Table1: Herbs act as proven immunomodulators in Rasayana are as follows:[21]

<i>Vacha - Acorus calamus</i>	<i>Guduchi- Tinospora cordifolia</i>
<i>Bakuchi - Psoralea corylifolia</i>	<i>Ashwagandha- Withania somnifera</i>
<i>Gulsakan - Sida spinosa</i>	<i>Punarnava- Boerhavia diffusa</i>
<i>Gambhari- Gmelina arborea</i>	<i>Patha- Cissampelos pareira</i>
<i>Rasona- Allium sativum</i>	<i>Guggul- Commiphora mukul</i>
<i>Ghritkumari- Aloe vera</i>	<i>Shankhpushpi- Convolvulus pluricaulis</i>
<i>Sariva- Hemidesmus indicus</i>	<i>Krishan Musli- Curculigo orchiodes</i>
<i>Vidari- Ipomoea digitata</i>	<i>Haridra- Curcuma longa</i>
<i>Vridhdaru- Argyreia speciosa</i>	<i>Shalparni- Desmodium gangeticum</i>
<i>Shatavari- Asparagus racemosus</i>	<i>Varahikand- Dioscora bulbifera</i>
<i>Jeevanti- Leptademia reticulata</i>	<i>Amalaki- Emblica officinalis</i>
<i>Pippali- Piper longum</i>	<i>Vidang- Emblica ribes</i>
<i>Beejak- Pterocarpus marsupium</i>	<i>Mundi- Spheranthus indicus</i>
<i>Bhallatak- Semecarpus anacardium</i>	<i>Bibhataki- Terminalia belirica</i>
<i>Chitrak- Plumbago zeylenica</i>	<i>Haritaki- Terminalia chebulica</i>
<i>Neem- Azadirachta indica</i>	<i>Aindri- Bacopa monerri</i>

Formulations that can be given are as follows

Oja is considered as the sub-product of *Shukra* as per Ayurveda. So various formulation that helps in restoring *Shukra Dhatu* can be given in SCID patient like:

- *Kaunch Paak*
- *Shilajeet*
- *Ashwagandha Arishta*
- *Mahakalyanak Ghrita*
- *Bhringraj Aasava*

Rasayanik Formulations like

- *Bhrama rasayana*
- *Chyavanprasha*
- *Aamlaki Rasyana*

Vata Balancing formulation that helps in nerve strengthening along with balancing all other Doshas

- *Bala Arishta*
- *Ashwagandha Arishta*
- *Ashwagandha Lehyam*
- *Ksheer Bala Taila*
- *Maharaj Prasarni Taila*

Modern treatment of SCID are as follows:

- Use of antibiotics
- Use of antiviral drugs like amantadine, acyclovir
- Gene therapy
- Stem cell transplantation
- Thymus tissue transplantation

CONCLUSION

As SCID is a rare disease and its prevalence is not so much high, but its cases are increasing worldwide. So, Ayurveda's contribution towards this disease is in need of an hour. From the above discussion we can conclude that although SCID is a genetic disorder, it can be well understood as per Ayurveda and can be named as "*Sahaja Asatmayata Oja Kshaya*" (SAOK). There is various line of treatment in Ayurveda that can be applied to this disease which not only helps to cure the disease but also helps SCID from an occurrence. I hope this article will act as an idea for the various researchers to work on SCID from an Ayurvedic perspective.

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