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Ayurveda

# THERAPEUTIC ROLE OF RAKTAMOKSHANA IN POLYCYTHEMIA VERA: A CASE-BASED PERSPECTIVE

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**ABSTRACT** An abnormal increase in red blood cell production characterizes polycythemia vera, a long-term myeloproliferative disorder that thickens the blood and heightens the likelihood of clotting and vascular complications. Current management mainly relies on cytoreductive treatments that reduce hematocrit levels to prevent adverse events. Nevertheless, these approaches focus on symptom control rather than cure and require ongoing, long-term follow-up. This case highlights the potential effectiveness of Ayurvedic treatments for managing polycythemia vera, suggesting that Raktamokshan could be a valuable complementary therapy alongside conventional approaches.

**KEYWORDS :** Chronic Myeloproliferative Neoplasms, Polycythemia Vera, Phlebetomy, Raktativriddhi, Rakta Dushti, Raktamokshan, Ayurveda.

## INTRODUCTION

Polycythemia vera (PV) is a myeloproliferative neoplastic (MPN) disorder that causes too many red blood cells to be made. This leads to a higher amount of red blood cell mass. All the blood cells i.e. RBCs, leucocytes and platelets show an increase in numbers[1]. Etiology of this disorder seems to be a type of abnormal cell growth i.e., neoplastic proliferation. There is a signaling defect which leads to an abnormal response to growth factors, and the abnormal clonal line interferes with normal lineage proliferation. This affects normal blood cell production. In about 90% of PV cases, a gene called Janus kinase-2 (JAK2) has a mutation[2]. Polycythemia vera shows up in about twenty-two out of every 100,000 people[3].It can affect anyone, regardless of their background. The disorder was first described by Louis Henri Vaquez in 1892 and later elaborated by William Osler, which resulted in the earlier name Vaquez–Osler disease. PV is now recognized as one of the classical myeloproliferative neoplasms with a significant risk of thrombotic complications and disease progression[4]. Polycythemia Vera is not specifically mentioned in classical Ayurvedic samhita. However, its clinical manifestations and pathophysiological features can be correlated with the Ayurvedic concepts of Raktavriddhi (increase Rakta Dhatu, Rakta Dushti (vitiation of Blood) and Raktagata Pitta.

Classical Ayurvedic texts describe a close relationship between Rakta and Pitta Dosha. Acharya Charaka explains that both share similar qualities, such as heat and liquidity, and any imbalance in Pitta can adversely influence Rakta Dhatu, leading to various systemic disorders[5]. Disturbances in Rakta Dhatu may manifest as redness of the skin, burning sensations, itching, and impaired circulation—features that resemble certain clinical presentations of polycythemia vera.

Ayurveda outlines several approaches for managing disorders of the blood (Rakta), with therapies such as Rakta Shodhana (blood purification) and Rakta Mokshana (bloodletting). These methods are intended to expel vitiated Rakta and restore balance within the body's systems. Acharya Sushruta's detailed account of Rakta Mokshana bears resemblance to modern phlebotomy, which is employed today in conditions like Polycythemia Vera.

The central objective is to eliminate impure blood, thereby promoting overall health. Both Sushruta and Charaka describe multiple anatomical sites suitable for performing Raktamokshana depending on the condition. Among these, Siravyadha (venesection) is considered the most effective, as it facilitates the removal of vitiated Rakta from the entire circulatory system[6]. Within Ayurveda, Siravyadha (venesection) holds a place of great importance and is even described as Ardhachikitsa—half of surgical therapy—within the discipline of Shalyatantra, highlighting its central role in treatment practices[7]. Although Polycythemia Vera is recognized today as a modern hematological disorder, its clinical features show striking parallels with Ayurvedic concepts such as Rakta Dushti (vitiation of blood), Raktavriddhi (excess blood), and Raktagata Pitta (pitta lodged in blood).

In this framework, the therapeutic method of Rakta Mokshana, particularly Siravyadha, emerges as a vital intervention as it mirrors the contemporary medical practice of phlebotomy, which is employed to manage conditions like Polycythemia Vera.

### Diagnostic Criteria

**Major Criteria**

1. Haemoglobin > 16.5 g/dl(men or >16.0 g/dl (women OR haematocrit >49%(men) or >48%(women)
2. BM biopsy showing hypercellularity for age with trilineage growth(panmyelosis) including prominent erythroid, granulocytic, and megakaryocytic proliferation with pleomorphic, mature megakaryocytes (differences in size).
3. Presence of JAK2V617F (a mutation in JAK2) or similar mutation

**Minor Criteria**

1. Subnormal serum EPO level

All three major criteria OR first two major criteria + minor criterion confirms the diagnosis of the disease.

### Case Report

A 45 years old female already diagnosed as Polycythaemia Vera came to OPD of Department of Kayachikitsa with complaints of Headache, Dizziness, Weakness, Dyspnoea, Loss of appetite from last 3-4days, patient came to our hospital Sane Guruji Arogya Kendra.

### Past History

K/C/O Polycythemia Vera since 10 years
Pulmonary Hypertension since 2 years
Medical History
She was on Tab Ecosprin 75mg 1OD antiplatelet medication.
Tab Suhagra 50mg ½ BD
Tab Lasilactone 20/50 1OD

### Clinical Findings

Pulse- 128/min
BP- 90/60mmhg
RS- B/L clear
CVS- S1S2 tachycardia
CNS- Conscious and Oriented

RR- 34/min
Spo2- 90% on RA
Per Abdomen- 2 fingers Hepatomegaly
3 fingers Splenomegaly

**Asthavidh Parikshan**
Nadi (Pulse)- Pitta pradhan Vataj
Mala (Bowel)- Shushkata yukta
Mutra (Urine)- Ushna
Jivha (Tongue)- Saam
Shabdh (Speech)- Spashta
Sparsh (Touch)- Sheet
Drik (Vision)- Prakrut
Akruti (Built)- Krush

**Investigations**
*CBC

| | |
|---|---|
| Hb-16.1 g/dl | Neutrophils- 88.68 % |
| HCT-59.5% | Lymphocytes- 7.7% |
| RBC-8.23*$10^6$ | Monocytes- 1.94 |
| Platelets-97000 | Eosinophils- 1.42 |
| WBC-10.93*$10^3$ | Basophils- 0.22 |
| MCV-72.4 fl | |

*BMB
increased cellularity, Mild Dyserythropoiesis seen, Megakaryocytes increased in number, Trilineage count increase, No iron seen.
*Serum EPO- 2.52 mIU/ml (Normal range: 8.9-29.5)

**Treatment**
The patient was seated in a comfortable position.

Tourniquet was tied just above the cubital fossa.

The area from where Raktamokshan was done was cleaned with spirit and betadine properly.

From the median cubital vein with the help of scalp vein the blood was with drawn approximately 150ml for 5 consecutive days.

Sterile gauge was placed after the procedure.

Along with this patient was also given supportive and necessary treatment.

## RESULT AND DISCUSSION
The patient was assessed by clinical features and blood investigations reports before and after treatment.

Acharya Charaka identified the mool sthan (primary sites) of the Raktavaha Srotas as the pleeha (spleen) and yakrut (liver)[8]. Clinical studies have shown that nearly 30% of individuals with Polycythemia Vera present with splenomegaly and hepatomegaly, which resonates with Charaka's observations[9]. Although Ayurveda does not equate Polycythemia Vera directly with a single condition, its manifestations resemble features of Raktavriddhi. Symptoms such as Kustha (skin disorders), Vyanga (pigmentation or discoloration), Pliha (splenic enlargement), Agninasha (loss of appetite), Sirapurnatvam (vascular fullness, linked to thrombosis), and Raktapitta (bleeding and coagulation disorders) show parallels with the clinical profile of Polycythemia Vera.[10-11]

Charaka further emphasized for vitiated Rakta in the shloka: "Kuryat Shonit Rogeshu Rakta-Pittahari Kriyam Virekam Upavasam cha Stravanam Shonitasya cha". This verse outlines the treatment pathway, recommending interventions such as Virechana (purgation), Upavasa (fasting), and Rakta Mokshana (bloodletting) to restore balance in blood-related disorders.[12]

It is also mention in Sushrut Samhita "रक्तमोक्षणं तु रक्तदुष्टिविकाराणां श्रेष्ठम् / Raktamokshana is considered one of the most effective therapies for disorders of the blood. By removing a portion of circulating blood, this practice may reduce overall blood volume and cellular concentration, thereby lowering viscosity. This principle closely parallels the medical procedure of therapeutic phlebotomy, which remains the cornerstone of treatment for Polycythemia Vera.

Raktamokshana is thought to promote Srotoshodhana (purification of bodily channels), enhancing microvascular circulation. By decreasing blood thickness, it helps restore hemodynamic stability. This is particularly relevant in Polycythemia Vera, where hyperviscosity slows blood flow and increases the risk of thrombosis. Thus, the Ayurvedic approach of Raktamokshana conceptually aligns with modern hematological practices.

Pitta Shamana is also aided by the process, which may account for clinical relief in signs including headache, erythema, and burning feeling. Rakta Shodhana, which is another crucial component, is thought to encourage the development of healthier Rakta Dhatu by eliminating "vitiated" blood.

## CONCLUSION
The case of a patient with Polycythemia Vera who underwent Raktamokshan with integrated medicines, demonstrated symptomatic relief and overall improvement. The results observed in this case are encouraging, and further clinical trials are needed to test the efficacy and wider applicability of such Ayurvedic interventions for myeloproliferative neoplastic disorders.

**Compliance with Ethical Standards**

| Date | Hb% | HCT% | RBCmillion/ mCL | WBC/mCL | Platelets/ mCL |
|---|---|---|---|---|---|
| 7/12/25 | 16.1 | 59.5% | 8.23*106 | 10.93*103 | 97000 |
| 9/12/25 | 15.6 | 56.7% | 7.84*106 | 17.53*103 | 105000 |
| 12/12/25 | 14 | 51.5% | 7.03*106 | 10.59*103 | 76000 |

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**Disclosure of Conflict of Interest**
The authors declare that there was no conflict of interest regarding the publication of manuscript.

**Statement of Informed Consent**
Informed consent was taken from the patient.

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