JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

ETIOPATHOLOGICAL STUDY OF *VRANAGATA VIKRITA KLEDA* WITH SPECIAL REFERENCE TO LABORATORY PARAMETERS

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ABSTRACT:
Background: *Vrana* (ulcer/wound) is a complex pathological condition described in Ayurveda as a discontinuity of body tissues, often becoming chronic when associated with systemic and local derangements. Among the various pathogenic factors implicated in the chronicity of *Dushta Vrana*, *Kleda*—the pathological expression of excess bodily moisture—plays a pivotal yet underexplored role. *Vikrita Kleda*, arising from *Kapha* aggravation, *Agnimandya*, and *Ama* formation, contributes to features such as excessive discharge, delayed healing, foul odor, and inflammation. Correlating this classical concept with contemporary inflammatory markers may enhance etiopathological understanding and clinical assessment. **Aim and Objectives:**
The study aimed to establish *Vranagata Vikrita Kleda* as a distinct etiopathological entity in *Vrana* and to explore its probable correlation with selected laboratory parameters. **Materials and Methods:** A clinical observational study was conducted on 100 subjects, comprising 20 patients each of *Prameha*, *Sthaulya*, *Sotha*, *Kustha*, and *Vrana*. Patients aged 18–70 years were assessed using a specially designed clinical proforma based on classical Ayurvedic descriptions of *Kleda*. Subjective and objective features of *Vikrita Kleda* were evaluated, and laboratory investigations including Total Leukocyte Count (TLC), Erythrocyte Sedimentation Rate (ESR), and C-reactive Protein (CRP) were performed. *Vikrita Kleda* was considered present when four or more predefined features were observed. **Results:** *Vrana* exhibited the highest expression of *Vranagata Vikrita Kleda*, with *Srava* and *Kandu* present in 90% of cases, followed by *Klinnata* and *Vedana* in 85%, *Chirakari* in 65%, and *Gandha* in 60% of patients. Elevated TLC was observed in 35% of *Vrana* cases. Inflammatory markers were significantly raised, with ESR elevated in 75% and CRP in 45% of *Vrana* patients. Additionally, *Prameha*-associated features were noted in 50% of *Vrana* cases, indicating a strong metabolic influence on *Kleda* aggravation and wound chronicity. **Conclusion:** The study establishes *Vranagata Vikrita Kleda* as a prominent and clinically relevant etiopathological factor in *Vrana*.
Keywords: *Vrana*, *Vikrita Kleda*, *Dushta Vrana*, *Prameha*, *Kapha*, *Ama*, TLC, ESR, CRP.

INTRODUCTION:

Vrana (ulcer or wound) represents a significant clinical challenge due to its varied etiology, chronicity, and potential for complications, particularly when healing is delayed or impaired. In Ayurveda, *Vrana* is described as a condition marked by rupture, disintegration, or discontinuity of body tissues, and its assessment is comprehensively carried out through *Darśana, Praśna,* and *Sparśana Parīkṣā*[1]. Classical texts emphasize that the prognosis and healing of *Vrana* depend not only on its anatomical location and depth but also on the underlying systemic and local pathological factors influencing tissue integrity and repair. Among the various pathogenic factors described in Ayurveda, *Kleda* holds a pivotal yet often underexplored role in the development and persistence of *Dushta Vrana*. *Kleda* denotes pathological moistness arising from deranged

Kapha and *Ama*, leading to impaired tissue metabolism, excessive discharge, foul odor, inflammation, and delayed wound healing[1, 2]. Although classical Ayurvedic literature does not describe *Vikrita Kleda* as an independent disease entity, its presence is repeatedly implied in conditions characterized by chronic inflammation, suppuration, and non-healing tendencies, particularly in *Vrana*. Modern wound pathology similarly recognizes the role of persistent inflammation, infection, and impaired immune response in chronic wounds. Laboratory parameters such as Total Leukocyte Count (TLC), Erythrocyte Sedimentation Rate (ESR), and C-reactive Protein (CRP) are widely used indicators of inflammatory and infective processes. In this context, the present study was undertaken to conceptualize *Vranagata Vikrita Kleda* as a distinct etiopathological entity and to evaluate its clinical expression in *Vrana*. Further, an attempt was made to explore its probable correlation with selected laboratory parameters.

AIM and Objectives:

a) AIM:

- To establish the concept of *Vranagata Vikrita Kleda* and its role in the etiopathogenesis of different *Vyadhi.*

b) OBJECTIVE:

- To assess the *Vranagata Vikrita Kleda* as an etiopathological entity in *Vrana*
- To explore the probable correlation of *Vranagata Vikrita Kleda* with different laboratory parameters in *Vrana*

MATERIALS AND METHODS:

Study Design and Selection of Subjects: This clinical observational study was conducted at the Government. Ayurvedic College and Hospital, Jalukbari, Assam. Literary references were drawn from classical Ayurvedic texts, modern literature, recent journal articles, and credible online sources. A total of 100 patients (20 each of *Prameha, Sthoulya, Sotha, Kustha,* and *Vrana*) were selected randomly from the OPD and IPD. Both male and female patients, aged 18 to 70 years, exhibiting clinical features associated with *Vranagata Vikrita Kleda*, and who provided informed consent, were included.

Clinical Assessment: A specially designed clinical proforma and validated questionnaire were used to assess both subjective and objective parameters of *Vranagata Vikrita Kleda.* The questionnaire was developed from classical Ayurvedic descriptions and translated into patient-friendly language, featuring binary response options (Yes = 1, No = 0). Laboratory parameters were graded as usual (0), high (1), or low (2).

Diagnostic and Laboratory Investigations

Each patient underwent the following laboratory tests: TLC, ESR and CRP

***Vikrita Kleda* Assessment Framework:** Since classical texts lack direct descriptions of *Kleda* features, assessment was based on Ayurvedic concepts of *Kapha Vriddhi and Ama.* A level was considered positive for *Vikrita Kleda* if four or more out of seven identified features were present. The proportion of subjective vs. objective findings and the dominance of specific types of *Kleda* were calculated accordingly.

Kleda:

Kleda is derived from the Sanskrit root *"Klid"*, meaning to moisten, wet, or dampen (*Klidati iti Kledah*), and broadly denotes moisture or wetness. Classical Sanskrit lexicons, including the *Monier–Williams Sanskrit-English Dictionary*, describe *Kleda* as humidity or dampness, a meaning consistently reflected in ancient texts such as the *Ramayana*. In Ayurveda, *Kleda* represents the functional expression of *Jala Mahābhūta* within the body and signifies the drava (fluid) component responsible for maintaining *Snigdhata* (unctuousness), *Mardavata* (softness), and *Picchilata* (stickiness) of bodily tissues.

Physiologically (*Prakrita Avastha*), *Kleda* supports fluid homeostasis, facilitates *Dhatu Poshana*, ensures smooth functioning of *Srotas*, and contributes to the formation of *Sweda* and *Mutra*. Its principal sites include *Meda Dhatu*, *Rasa Dhatu*, and the *Mootravaha* and *Swedavaha Srotas*, which serve as channels for *Kleda* regulation and elimination. *Kleda* is closely allied with *Kapha Dosha*, particularly *Tarpaka*, *Avalambaka*, and *Bodhaka Kapha*, due to shared qualities such as *Snigdha, Guru, Picchila,* and *Drava*. Pathologically (*Vikrita Avastha*), impaired digestion (*Agnimandya*), metabolic dysfunction, and *Kapha Prakopa* lead to excessive accumulation of *Kleda.* This *Vikrita Kleda* causes *Srotorodha*, deranges *Dosha–Dhatu–Agni* interactions, and plays a pivotal role in the etiopathogenesis of disorders such as *Prameha, Sthaulya, Sotha, Kustha,* and *Vrana*[3, 4, 5].

VRANA:

The term "*Vrana"* signifies rupture, destruction, or discontinuity of body tissues. In *Ayurveda*, its examination is carried out through *Trividha Parīkṣā*, comprising *Darśana* (inspection), *Praśna* (interrogation), and *Sparśana* (palpation). Inspection involves both general examination of the entire body and local examination of the affected part to establish an accurate diagnosis. Interrogation helps in understanding the etiological factors, nature of pain, individual suitability or intolerance to food (*Satmya/Asatmya*), response to medicines, digestive capacity, and related aspects. Palpation, on the other hand, provides direct assessment of the ulcer by evaluating its margin, size, depth, temperature, consistency, or hardness. The prognosis of a *Vrana* depends upon its site of occurrence, whether it is located in the skin (*Tvak*), blood vessels (*Śirā*), muscle tissue (*Māṃsa Dhātu*), fatty tissue (*Meda Dhātu*), bone (*Asthi Dhātu*), ligaments (*Snāyu*), vital organs (*Marma*), or within the thoracic and abdominal viscera (*Antarāśraya*)[6].

Vrana is defined as a pathological condition characterized by rupture, disintegration, or discontinuity of the body tissues[7]. The word *Vrana* means splitting or tearing of the body.

Ayurvedic texts describe twenty distinct types of *Vrana* (ulcers), classified on the basis of their characteristic features. These include ulcers that are curable—often manageable through surgical intervention—and those considered incurable; infected and non-infected forms; ulcers situated in vital areas of the body as well as those in non-vital regions; closed and open varieties; hard and soft types; discharging and non-discharging forms; poisonous and non-poisonous ulcers; those occurring in uneven versus even locations; pouched and non-pouched varieties; and finally, elevated and depressed types. Together, these classifications form the twenty categories of ulcers described in *Ayurveda*[8]. *Ayurvedic* literature also describes twelve varieties of *Dushta Vrana* (defective or vitiated ulcers). These include ulcers that are whitish in appearance, those with depressed or sunken margins, ulcers with excessively thick margins, greyish or *Pinjara* type, bluish in color, blackish in nature, those surrounded by multiple boils, reddish ulcers, completely black lesions, ulcers emitting a foul odor, non-healing types, and those having a narrow, bottle-neck-like opening. Together, these constitute the twelve recognized categories of defective ulcers[9].

Wounds and ulcers are disruptions in the continuity of the skin or mucosal surfaces, often involving underlying tissues. While both represent tissue damage, wounds typically refer to acute mechanical injuries, whereas ulcers are usually chronic lesions resulting from impaired healing or persistent pathological processes. Understanding the classification, causal variables, and pathophysiological mechanisms is crucial for efficient therapy, preventing problems, and promoting tissue regeneration[10].

KLEDA* IN RELATION TO *DUSTHA VRANA:

Kleda has a localized presence in *Dustha Vrana,* which is understandable given that *Nirharana* of *Kleda* from the local site of *Vrana* aids in its resolution. The relation of *Kleda* with *Kala* and *Ashaya* and the concept of *Dhatu Kleda* are also mentioned.

Due to the *Swatantra* and *Paratantra Nidana Sevana* which leads to *Madhura* and *Lavana Rasaadhikya* in the body leads to the *Kleda Nirmitti* in *Rasa* and *Rakta Dhatu (i.e. Vidagdha Kleda Vriddhi),* which leads to the *Kapha - Pitta - Rakta Dusthi.* Circulation of *Dushit Dosha, Vikrita Kleda* through *Rasa- Rakta Vahini* in the body, leads to inflammation in the *Rasa, Rakta Vahaini* during circulation. *Margavarodha* of *Prakrita Gati* of *Vata Dosha* due to inflammation leads to *Tiryaka Gati* of *Vata Dosha* along with *Dusthi of Kapha, Pitta, Rakta* and *Kleda. Sthanasamshraya* of *Dushit Dosha, Kleda, Twakgata Rakta, Mamsa, Lasika Dusthi, Kleda Vriddhi* takes place. Further, *Utpatti* of *Sotha, Shoola, Kandu, Aaraktata- Shyvata Utpatti* takes place. Excess *Kleda* leads to *Kotha Utpatti, Durgandhi Srava* leading to *Dustha Vrana*[11]. References of *Kleda* in relation to *Vrana* has been tabulated below.

Table 1: References of *Kleda* in relation to *Vrana*

VRANA			
Charaka Samhita	***Sushruta Samhita***	***Astanga Hridaya***	***Madhava Nidana***
CharakSanhita Chikitsa Sthana-25 Dwivraniya Adhyaya	*SushrutSamhita Sutra Sthana- 18 Vrana Lepana Bandha Vidhi Adhyaya*	*Astanga Hridaya -10 Rasa Bhediyam Adhaya*	*Madhava Nidana-41 Vrana Sotha Nidana*
	Sushruta Samhita Sutra Sthana-21 Vranitaopashaniyaadhy	*Astanga Hridaya Nidana Sthana-11 Vidhradhi Vriddhi*	*Madhava Nidana-42 Sharira Vrana Nidanam*

	aya	*Gulma Nidanam*	
	Sushruta Samhita Sutra Sthana-22 Vrana Prashna Adhyaya	*Astanga Hridaya Uttarasthanam-25 Vrana Pratisheda Adhyaya*	
	Sushruta Samhita Chikitsa Sthana-1 Dwivraniya Chikitsa		

RESULTS AND OBSERVATION: In this study, total 100 pre-diagnosed subjects with 20 subjects each of *Prameha, Sthoulya, Sotha, Kustha* and *Vrana* were taken for the study.

Table 2: Incidence of *Vranagata Vikrita Kleda*

Vranagata Vikrita Kleda	***Prameha*** (n=20)		***Sthoulya*** (n=20)		***Sotha*** (n=20)		***Kustha*** (n=20)		***Vrana*** (n=20)	
	No of Patient	%	No of Patient	%	No of Patient	%	No of Patient	%	No of Patient	%
Klinnata	5	25	2	10	2	10	2	10	17	85
Vedana	1	5	0	0	0	0	0	0	17	85
Srava	1	5	1	5	2	10	0	0	18	90
Kandu	1	5	0	0	1	5	0	0	18	90
Chirakari	5	25	2	10	0	0	0	0	13	65
Gandha	1	5	0	0	0	0	0	0	12	60
Symptoms influenced by Prameha	7	35	1	5	0	0	2	10	10	50

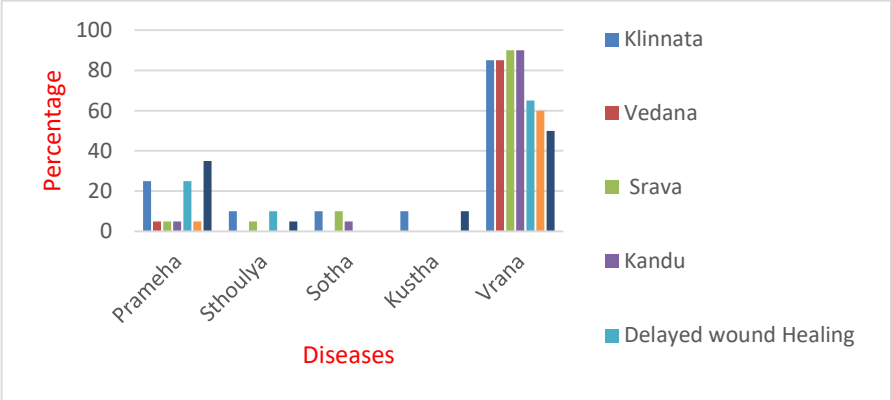

Fig. 1: Incidence of *Vikrita Kleda in Vrana* in 20 subjects of *Prameha, Sthoulya, Sotha, Kustha* and *Vrana* (n=100)

The study shows that the *Vrana* is having the highest prevalence of features with *Srava* and *Kandu* (90% each) followed by *Klinnata* and *Vedana* (85% each). Symptoms influenced by *Prameha* were seen highest in *Prameha* subjects with 35% prevalence. Further *Chirakari* was also most prevalent in *Prameha* subjects with 25% prevalence.

Table 3: Incidence of TLC in *Prameha, Sthoulya, Sotha, Kustha* & *Vrana*

TLC	*Prameha* (n=20)		*Sthoulya* (n=20)		*Sotha* (n=20)		*Kustha* (n=20)		*Vrana* (n=20)	
	No of Patient	%	No of Patient	%	No of Patient	%	No of Patient	%	No of Patient	%
Within Normal Limit	15	75	18	90	16	80	14	70	13	65
High	4	20	2	10	4	20	4	20	7	35
Low	1	5	0	0	0	0	2	10	0	0

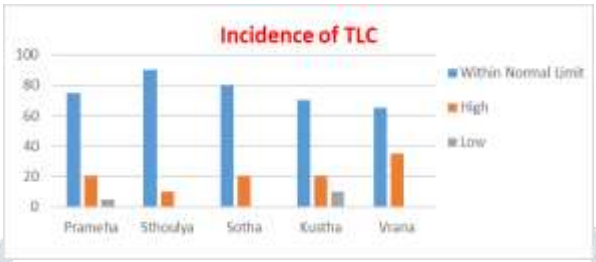

Fig. 2: Incidence of TLC in 20 subjects of *Prameha, Sthoulya, Sotha, Kustha* and *Vrana* (n=100)

The study shows that in *Prameha*, 20% show high TLC, and 5% have low TLC. In *Sthoulya*, 10% is high and 0% low. In *Sotha*, 20% is high and 0% low. In *Kustha*, 20% is high and 10% low. In *Vrana*, 35% is high and 0% low.

Table 4: Incidence of ESR in *Prameha, Sthoulya, Sotha, Kustha* and *Vrana*

ESR	*Prameha* (n=20)		*Sthoulya* (n=20)		*Sotha* (n=20)		*Kustha* (n=20)		*Vrana* (n=20)	
	No of Patient	%	No of Patient	%	No of Patient	%	No of Patient	%	No of Patient	%
Within Normal Limit	9	45	10	50	6	30	6	30	5	25
High	11	55	8	40	14	70	14	70	15	75
Low	0	0	2	10	0	0	0	0	0	0

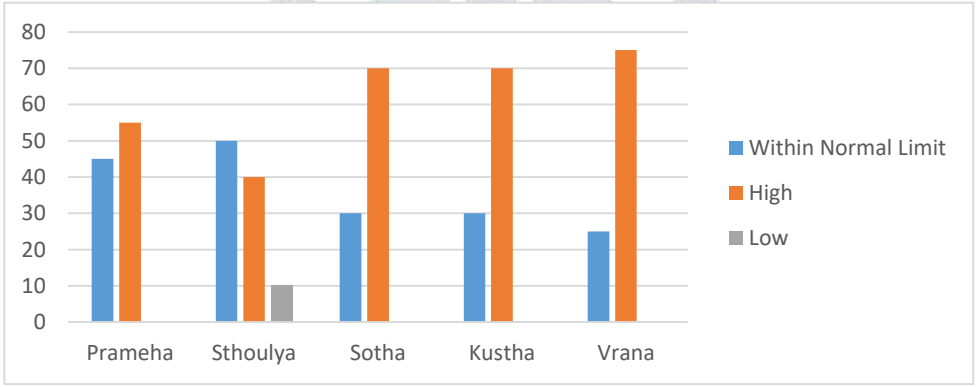

Fig. 3: Incidence of ESR in 20 subjects of *Prameha, Sthoulya, Sotha, Kustha* and *Vrana* (n=100)

In *Prameha*, 55% of subjects have high ESR, 45% are within normal limits, and 0% is low. In *Sthoulya*, 40% have high ESR, 50% are within normal limits, and 10% are low. In *Sotha*, 70% have high ESR, 30% are within normal limits, and 0% is low. In *Kustha*, 70% have high ESR, 30% are within normal limits, and 0% is low. In *Vrana*, 75% have high ESR, 25% are within normal limits, and 0% is low.

Table 5: Incidence of CRP in *Prameha, Sthoulya, Sotha, Kustha* and *Vrana*

CRP	*Prameha* (n=20)		*Sthoulya* (n=20)		*Sotha* (n=20)		*Kustha* (n=20)		*Vrana* (n=20)	
	No of Patient	%	No of Patient	%	No of Patient	%	No of Patient	%	No of Patient	%
Within Normal Limit	18	90	19	95	8	40	17	85	11	55
High	2	10	1	5	12	60	3	15	9	45
Low	0	0	0	0	0	0	0	0	0	0

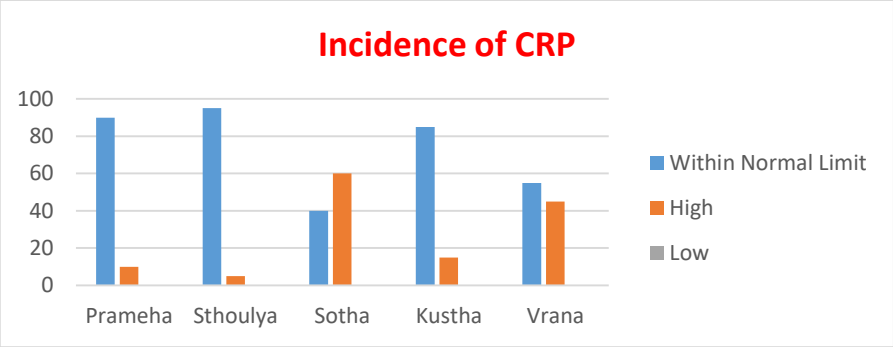

Fig. 4: Incidence of CRP in 20 subjects of *Prameha, Sthoulya, Sotha, Kustha* and *Vrana* (n=100)

The study shows that in *Prameha* 90% are within normal limits, 10% are high, and 0% are low. In *Sthoulya*, 95% is within normal limits, 5% are high, and 0% is low. In *Sotha*, 40% are within normal limits, 60% are high, and 0% are low. In *Kustha*, 45% are within normal limits, 55% are high, and 0% are low. In *Vrana*, 55% are within normal limits, 45% are high, and 0% are low.

DISCUSSION:

Assessment of *Vikrita Kleda* in *Vrana*: The study shows that *Vrana* exhibits expression of *Vikrita Kleda* with its *Kledagata* features, making it the representative of *Kleda* vitiation. The combination of *Srava, Klinnata, Gandha*, and delayed healing indicates *Dushta Vrana* or chronic wounds. High *Prameha* influence (50%) shows that Diabetic wounds are a significant subset, explaining the chronicity and infection risk.

Assessment of TLC in *Prameha, Sthoulya, Sotha, Kustha* and *Vrana:* Few incidences of elevated TLC in *Vrana* and *Prameha* highlight a relation with chronic conditions or active inflammation.

Assessment of ESR in *Prameha, Sthoulya, Sotha, Kustha* and *Vrana*: High ESR is prevalent across all conditions, with *Vrana* and *Sotha* showing the highest incidence (75% and 70%, respectively). This suggests significant inflammation or chronic disease activity in these groups. *Sthoulya* stands out with 10% low ESR, indicating some variability.

Assessment of CRP in *Prameha, Sthoulya, Sotha, Kustha* and *Vrana*: CRP levels are mostly within normal limits for *Prameha* and *Sthoulya*, indicating less acute inflammation. However, *Sotha* shows the highest proportion of elevated CRP (60%), suggesting acute inflammatory activity, followed by *Kustha* (55%) and *Vrana* (45%).

CONCLUSION: The findings of the present study substantiate *Vranagata Vikrita Kleda* as a prominent and distinct etiopathological entity in *Vrana*, evidenced by both clinical expression and laboratory parameters. Among the five disease groups studied, *Vrana* exhibited the highest prevalence of *Kleda*-dominant features**,** with *Srava* and *Kandu* observed in 90% of cases, followed by *Klinnata* and *Vedana* in 85%, *Chirakari* in 65%, and *Gandha* in 60% of subjects. These values clearly indicate a strong association between *Vikrita Kleda* and the classical features of *Dushta Vrana*, particularly chronicity, excessive discharge, and delayed wound healing. Laboratory investigations provided objective corroboration of these clinical findings. Elevated Total Leukocyte Count (TLC) was noted in 35% of *Vrana* patients, the highest among all groups, reflecting ongoing inflammatory or infective pathology. Inflammatory markers further reinforced this observation, with raised

ESR in 75% of *Vrana* cases, compared to 70% in *Sotha* and *Kustha*, and 55% in *Prameha*. Similarly, CRP levels were elevated in 45% of *Vrana* patients, indicating active inflammatory processes, while comparatively lower elevations were observed in *Prameha* (10%) and *Sthoulya* (5%), suggesting a more chronic, low-grade pathological milieu in these conditions. Additionally, the influence of *Prameha* on *Vrana* was evident, with 50% of *Vrana* patients exhibiting *Prameha*-associated features, highlighting the contributory role of metabolic dysregulation in enhancing *Kleda* accumulation and impairing wound healing.

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