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Evaluating Panchvalkala Ointment's Healing Properties in Suppurated Cervical Lymphadenitis: A Case Report

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Abstract

An inflammatory or non-inflammatory enlargement of the lymph nodes is known as lymphadenopathy. The prevalence of lymphadenopathy illnesses increases with age. In *Ayurveda*, lymphadenopathy is generally described as five diseases, namely *Arbuda* (Tumor), *Granthi* (Cyst), *Apachi* (Cervical lymphadenitis), *Gandamala* (scrofula), and *Pashangardabh* (Temporomandibular inflammation). The case described here is *Apachi*. Acharyas focused on the disease's site of occurrence while characterizing *Apachi*. The book described the following locations as the site of occurrence: *Hanuasthi* (mandible bone), *Kaksha* (axillary), *Akshak* (clavicle), *Manya* (neck), and *Vangshan* (medial aspect of thigh). These were the lymph nodes mostly superficial lymphatic outflow regions. The method followed here was pre-operative medications followed by surgical management, i.e., *Bhedana* (Incision) leading to immediate drainage of tubercular cervical abscesses along with post-operative management and successive dressing of the wound until complete healing of the cavity through Ayurvedic *Panchavalkal* ointment. The problem was completely cured as a result of the prescribed Wound care ointment treatment followed by Incision and Drainage. This case study described how to successfully combine surgical and Ayurvedic treatment to treat *Manyagata Apachi*, or tubercular cervical lymphadenitis, which developed into an abscess. Suppurative cervical lymphadenitis is a frequently encountered condition with various aetiologies. Early recognition, Accurate diagnosis, and appropriate management are essential to prevent complication and promote optimal patients' outcomes.

Keywords: Adenitis, Apachi, Cervical Lymphadenitis, *Panchavalkal*, Tubercular Lymphadenitis.

Introduction

Lymphadenopathy refers to the enlargement of lymph nodes (over 1 cm), caused by either inflammatory or non-inflammatory processes. It may result from lymphocyte activation, follicle proliferation, metastasis, or lymphoma. Enlarged lymph nodes in regions like the supraclavicular, popliteal, iliac, and epitrochlear areas (>5 mm) can signify conditions like tuberculosis or coccidioidomycosis. Cervical lymphadenopathy is common in paediatric patients and often results from temporary responses to local or widespread infection (1). Cervical region is noted as the most frequent site of lymphadenopathy (89%), followed by axillary, occipital, supraclavicular, submental, and inguinal regions. Acute bilateral cervical lymphadenitis is typically caused by viral upper respiratory tract infections or streptococcal pharyngitis (2). The differential diagnosis includes several possibilities, such as streptococcal pharyngitis, viral upper respiratory infections, dental abscesses, soft tissue and skin infections like cellulitis, cat-scratch disease, lymphoma, squamous cell carcinoma, metastatic carcinoma, granulomatous diseases, tuberculosis, and rubella (3). Cervical lymphadenopathy is most common, particularly in tuberculosis cases, with a prevalence of 79% in India (4) majority of the cases of tuberculous lymphadenopathy occurred in subjects of <40 years of age (5). Challenges in managing cervical lymphadenopathy include difficulty diagnosing atypical causes, treatment resistance, and potential complications like antibiotic resistance, immune suppression, or chemotherapy toxicity. A comprehensive assessment involving medical history, physical examination, and possibly additional tests like throat swabs, imaging scans, or blood tests is crucial for accurate diagnosis and treatment. The treatment for suppurative cervical lymphadenitis typically involves a combination of broad-spectrum antibiotics such as Amoxicillin-Clavulanate or Ceftriaxone to target the infection. If an abscess is present, surgical intervention through incision and drainage is usually necessary

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to remove pus and relieve symptoms. Close monitoring of the patient's condition is critical to ensure resolution of the infection, and addressing any underlying causes, such as tuberculosis is necessary. Ayurveda is becoming popular as a mainstream healthcare system. People are turning to herbal preparations due to the cost and side effects of modern medicine. The demand for Ayurvedic remedies is increasing among doctors and the public. *Panchavalkala* is a combination of the barks from five latex-producing trees. Acharya Sushruta classified various medicinal drugs and their applications in surgical conditions. In *Vranachikitsa* (wound management), Sushruta described more than 100 drugs that are effective for both *Vranashodhan* (managing wounds) and *Vranaropana* (promoting healing). *Panchavalkala*, known for its *Kashaya Rasa* (astringent taste), is one of the key drugs from this group that is highly effective in wound healing (6). Infected lymph nodes can become suppurative and are typically treated through incision and drainage, leaving the wound open for healing over time. In this case study, the patient had a history of pulmonary tuberculosis and had completed a 6-month course of anti-tuberculosis treatment (ATT). This raises the possibility that the infection could be tubercular in origin, complicating the wound healing process. Therefore, an Ayurvedic approach was employed, utilizing the wound healing and antimicrobial properties of *Panchavalkala* ointment.

Methodology

A 33-year-old female patient presented with complaints of swelling near the right side of her neck for the past 8 days. She reported experiencing mild pain for the last 3 days, accompanied by fever (on and off) and generalized weakness. Consequently, she visited the Shalyatantra, Outpatient department, on 07/11/2022. The patient had no history of Diabetes Mellitus, Hypertension, Hyperthyroidism, Hypothyroidism, or Asthma. However, she was a known case of pulmonary tuberculosis and had completed a course of AKT (Anti-tuberculosis Medication) for 6 months.

Figure 1: Pre-Operative Swelling at Right Side of Neck

The patient's personal history revealed several concerns. Their dietary habits were poor, leading to a reduced appetite. They experienced disrupted sleep patterns and frequent urination, suggesting a possible urinary tract issue. However, their bowel movements were regular, with no history of constipation. Importantly, the patient did not have any addictive habits. Addressing these concerns through medical evaluation and lifestyle modifications was necessary to improve overall well-being. General examination shows No signs of pallor or icterus were observed in the eyes, indicating no apparent issues with blood or liver function. However, the tongue was coated, suggesting potential oral hygiene issues or underlying conditions affecting the oral cavity. The patient had a slightly elevated body temperature of 99.8 Fahrenheit, normal cardiovascular sounds and no murmurs detected. The central nervous system examination indicated the patient was conscious and well-oriented. Respiratory examination revealed bilateral symmetrical air entry with no adventitious sounds heard, suggesting no abnormalities in lung function. Abdominal examination revealed a soft, nontender abdomen with no organomegaly and normal bowel sounds.

In the local examination, acute cervical lymphadenitis was evident on the right side, characterized by a length 3cm Breath 1.5 cm abscess. Notable features included significant pus discharge and tenderness was present. Additionally, bilateral lymph nodes in the neck were palpable. These findings indicate an inflammatory process, warranting further evaluation and management to alleviate symptoms and promote recovery. The patient's vital signs were within normal limits, with a blood pressure of 120/80 mmHg and a heart rate of 74 beats per minute. Consequently, the patient was advised to undergo blood tests, a urine test, and an ultrasonography (USG). The results of these diagnostic tests were as follows: Haemoglobin (HB) level was 8.2 gm%; Total Leukocyte Count (TLC) was 9700 cu/mm; Erythrocyte Sedimentation Rate (ESR) was 38 mm/hr; Australia Antigen was non-reactive; Human Immunodeficiency Virus (HIV) was non-reactive; Random Blood Sugar (RBS) was 108 gm% mm. The patient underwent a Mantoux test, which returned positive results. However, further testing using CBNAAT showed negative results for tuberculosis. The USG revealed a heterogeneous hypoechoic area with debris and a few calcific foci within increased vascularity in the right supraclavicular region, measuring 31mm *16.7 mm.

Operative Procedure

All preoperative procedures were conducted, under aseptic precautions with the patient positioned supine and under local anaesthesia supplemented with short general anaesthesia. After cleaning and draping the affected area, a linear incision was made over the inflamed suppurative lymph node, revealing white caseous material at its base. The incision was deepened, pus pockets were drained, and samples were collected for culture and sensitivity testing. The cavity was then irrigated with hydrogen peroxide, Betadine, and normal saline. Excision of the cavity's edges was performed followed by suturing of the first layer with Vicryl 3.0. Skin was lay open for healing by secondary intention. Betadine dressing was applied, complete haemostasis was achieved before the patient was transferred to the recovery room in stable condition.

Post-Operative

Postoperatively, the patient was put on intravenous antibiotics for 2 days along with analgesics as needed. This was followed by the administration of tab *Triphala Guggul* and tab *Arogyavardhini Vati* orally for their anti-inflammatory effects. Additionally, the surgical wound was dressed daily with *Panchvalkal* ointment (Procured from authentic source) containing *Vada* (*Ficus bengalensis)* 5 gm*, Pipal (Ficus religiosa)* 5gm*, Udumbar (Ficus glomerata)* 5 gm, *Plaksha (Ficus lacor)* 5gm, and *Vetas (Salix Capria)* 5gm and *Yashtimadhu* (*Glycyrrhia Glabra*) 2.5 gm per 100 gm of ointment.

Figure 2: Intra Operative Drainage of Abscess

Figure 3: Post-Operative Wound

Figure 4: Gradual Healing of the Post-Operative Wound

Results and Discussion

Over the course of 20 days, wound size reduction progressed steadily. Beginning at 0%, the wound size decreased by 40% on day 5, reaching 70% reduction by day 10. Progress continued with a reduction of 90% by day 15, culminating in complete closure (100% reduction) by day 20 as shown in Figure 5 and Table 1. This data illustrates the efficacy of daily dressing with *Panchavalkala* ointment in promoting significant wound healing within a relatively short duration. The follow-up period lasted for an additional 14 days, during which no recurrence of symptoms or wound infection was observed.

Table 1: Tabular Representation of Wound Size Reduction with Days

S no.	Day	Wound Size	% reduction
1	Baseline or day 0	~520 mm^2	0
2	5	~ 310 mm^2	40
3	10	~ 156 mm^2	70
4	15	~ 52 mm^2	90
5	20	Wound closed	100

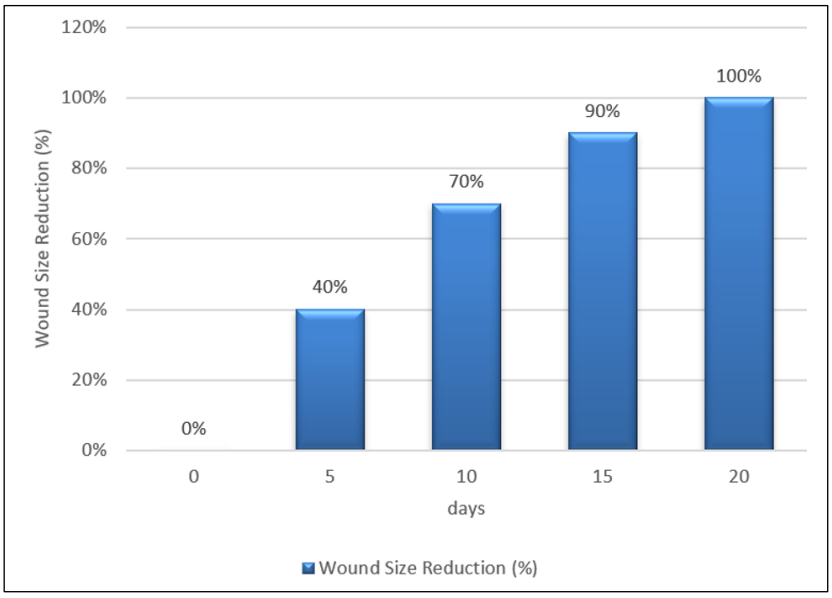

Figure 5: Graphical Representation of Reduction of Wound Size in Percentage on Course of Days

Lymphadenitis is defined as inflammation of the lymph nodes usually initiated by an infectious agent. (7) The infected lymph node can progress to cause pyogenic inflammation through necrosis and liquefaction; known as suppurative lymphadenitis (8, 9). This can affect the surrounding soft tissue and/or cause a systemic reaction (10, 11) particularly in the head and neck area, which are abundant in lymph nodes, and other vital structures. This leads to serious complications such as internal jugular vein (IJV) thrombosis, and carotid artery aneurysm. Deep neck space infection can also further complicate cervical lymphadenitis. Tuberculous lymphadenitis is one of the most common causes of lymphadenopathy in adults, particularly in developing countries with cervical lymph nodes as the major site of lymphadenopathy in ~90% of the cases (12). Lymphadenitis can generally be treated empirically using antibiotics. However, in pyogenic cases, patients require both abscess drainage and antibiotic treatment for successful outcomes (13, 14).

In cases involving tuberculosis alongside cervical lymphadenitis, management can be challenging due to delayed healing associated with the involvement of tubercular bacteria (15). In Ayurveda, addressing such wounds, known as "*Dushta vrana*," requires specific treatments aimed at both *Vrana Shodhan* and *Vrana Ropan* (16). *Panchavalkala*, a combination of barks from five trees including *Ficus bengalensis*, *Ficus religiosa, Ficus glomerata*, *Ficus lacor*, and *Thespesia populenea*, has demonstrated effectiveness in controlling wound infection when applied externally. This suggests its potential action in cleansing wounds. Thus, using *Panchavalkala* plant extract in the form of an ointment facilitates quick wound healing, which may not be achievable otherwise (17).

The antimicrobial activity of *Panchavalkala* ointment was compared with standard antibiotics, Chloramphenicol and Ciprofloxacin. The ointment showed significant efficacy against *Staphylococcus aureus* and *Escherichia coli*, demonstrating greater sensitivity toward the gram-positive bacteria (*S. aureus*) than the gram-negative bacteria (*E. coli*) (18). Further studies assessed the efficacy of *Panchavalkala* extract against *Staphylococcus aureus* (gram-positive), *Escherichia coli*, and *Pseudomonas aeruginosa* (gram-negative). These results highlighted that the extract possessed

greater antimicrobial activity compared to its individual components (19). The phytoconstituents extracted from *Panchavalkala*, were isolated and evaluated for antimicrobial activity concluded that tannins exhibited the most significant antimicrobial activity (20). Additionally, an evaluation of the alcoholic extract of *Panchavalkala* was conducted to determine its in vitro antibacterial activity against MRSA (Methicillin-resistant *Staphylococcus aureus*), known for its resistance to antibiotics such as Gentamicin, Norfloxacin, Penicillin G, Benzyl Penicillin, and Cefotaxime. Concluded that *Panchavalkal* (21). The antibacterial efficacy of the *Panchavalkala* ointment tested against *Escherichia coli*, *Staphylococcus aureus*, and *Streptococcus pyogenes* using the agar diffusion method results that the *Panchavalkala* ointment not only exhibited notable antibacterial activity but also significantly enhanced the wound healing process (22). *Panchavalkala* is used in the treatment of various types of wounds, including chronic non-healing ulcers (23-25), necrotizing fasciitis (26), postoperative fistula wounds (27), episiotomy wounds (28), and more.

Therefore, *Panchavalkala* Ointment was intended to be used for its wound healing and antimicrobial effects on postoperative wounds resulting from cervical lymphadenopathy. Furthermore, Tab *Triphala Guggul*, known for its anti-inflammatory properties, complements the wound healing process. Its anti-inflammatory effects aid in reducing inflammation and promoting tissue repair, thus contributing to the overall healing process. By incorporating Tab *Triphala Guggul* into the treatment regimen, the inflammatory response associated with the wound can be effectively managed, facilitating a smoother healing process (29). This case report has certain limitations, including the small sample size and the absence of a control group. While the results indicate promising efficacy of *Panchavalkala* in managing healing of post Incision and Drainage wound of Suppurative lymphadenitis, it is crucial to recognize that individual patient responses can vary. To draw more definitive conclusions about the effectiveness of *Panchavalkala*, larger and well-controlled studies are necessary. Prior research regarding the application of Panchavalkala in lymphadenitis provides a foundational understanding; however, further investigations are essential to validate these findings and explore the therapeutic potential of this Ayurvedic formulation in broader clinical settings.

Conclusion

The combined use of *Panchavalkala* ointment and Tab *Triphala Guggul* offers a holistic approach to managing tuberculosis-associated cervical lymphadenitis with delayed wound healing. While *Panchavalkala* ointment addresses wound infection and promotes tissue regeneration through its cleansing and healing properties, Tab *Triphala Guggul* complements the process by alleviating inflammation. This integrative approach accelerates the healing process, ensuring optimal outcomes for patients with complex wound management needs. More research is warranted to explore the efficacy of *Panchavalkala* in other forms for treating tuberculosis patients or wounds in individuals affected by tuberculosis.

Abbreviations

AKT: Anti-tuberculosis Medication, USG: Ultrasonography, HB: Haemoglobin, TLC: Total Leukocyte Count, ESR: Erythrocyte Sedimentation Rate, HIV: Human Immunodeficiency Virus, RBS: Random Blood Sugar.

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Author Contributions

Dr. Amar Kadav: Designed the study and drafted the manuscript, Dr. Yogesh Yadav: Collected the data and performed the analysis, Prof. Dr. Sheetal Asutkar: Supervised the project and provided critical revisions. All authors contributed to the interpretation of the results, reviewed the manuscript, and approved the final version.

Conflict of Interest

There is not any conflict of interest between authors of this article.

Ethics Approval

Informed consent was obtained from the patient involved in the case study, ensuring adherence to ethical guidelines and confidentiality standards.

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