

CASE STUDY

Panchavalkala Kwath Prakshalan in the Management of Multi-antibiotic Resistance of *Pseudomonas aeruginosa* - A Case Study

Author: Anjana Dabhi¹

Co Authors: Rizvanvaris Saiyed², Vaibhavi Patel³, Rajesh Kumar Sharma⁴ and Harshit Shah⁵

¹⁻⁵Department of Shalya Tantra, Government Akhandanand Ayurveda College, Bhadra, Ahmedabad, Gujarat, India

ABSTRACT

Pseudomonas aeruginosa is an opportunistic pathogen in immune compromised patients and is responsible for all hospital acquired infections worldwide. *Pseudomonas aeruginosa* causes infections at almost all sites in the body. Due to development of multiantibiotic resistance during treatment *Pseudomonas aeruginosa* becomes therapeutic challenge. In the present case study a 38 years old male patient visited OPD of *Shalya Tantra* with complaints of a big venous ulcer in right leg with *Pseudomonas aeruginosa* infection. Here patient is treated with *Panchavalkala Kwath Prakshalan*. This study highlighted *Vrana shodhana*, Desloughing, Antimicrobial, Antibacterial, Antiseptic property of *Panchavalkala kwath Prakshalan* and its efficacy against multiantibiotic resistance *Pseudomonas aeruginosa*.

Key Words *Pseudomonas Aeruginosa, Panchavalkala Kwath Prakshalan, Multiantibiotic Resistance*

Received 13th May 22 Accepted 05th July 22 Published 10th July 2022

INTRODUCTION

The *Pseudomonas* are a heterogenous group of Gram-negative bacteria. The pathogenicity of most pseudomonads is based on opportunism. *Pseudomonas aeruginosa*, the major pathogen of the group, is mainly associated with infections in hospitalized patients and in patients with cystic fibrosis. (Harr.)¹. *Pseudomonas aeruginosa* causes infections at almost all sites in the body². The infections encountered most commonly in hospitalized patients (Harr.) *Pseudomonas aeruginosa* remains a prominent cause of burn

and wound infections in some parts of the world. (Harr.) *Pseudomonas aeruginosa* is notorious for antibiotic resistance. (Harr.)³. During three decades, the impact of resistance was minimized by the rapid development of potent antipseudomonal agents. However, the situation was recently changed, with the worldwide selection of strains carrying determinants that mediate resistance to Beta lactams, fluoroquinolones, and aminoglycosides. This situation has been compounded by the lack of development of new classes of antipseudomonal

CASE STUDY

drugs for nearly two decades. (Harr.) *Panchavalkala* trees are called *Panchksheeri vriksha* having group of barks of five latex producing trees. *Panchavalkala* is a formulation made up of the bark of five trees viz. *Vata* (*Ficus*

bengalensis Linn.), *Udumbar* (*Ficus glomerata* Roxb.), *Ashvattha* (*Ficus religiosa* Linn.) *Parisha* (*Thespesia Populnea* Linn.) and *Plaksha* (*Ficus locar* Buch-Ham.)⁴.

Table 1 *Panchavalkala Kwath* Drugs

| Drugs | Latin Name | Part used | Proportion |
|-----------|---------------------------------|-----------|------------|
| Vata | <i>Ficus bengalensis</i> Linn. | Bark | 1 Part |
| Udumbar | <i>Ficus glomerata</i> Roxb. | Bark | 1 Part |
| Ashvattha | <i>Ficus religiosa</i> Linn. | Bark | 1 Part |
| Parisha | <i>Thespesia Populnea</i> Linn. | Bark | 1 Part |
| Plaksha | <i>Ficus locar</i> Buch-Ham. | Bark | 1 Part |
| Water | | | Q.S. |

Panchavalkala Kwath having properties of *Shodhana*(cleaning) and *Ropana* (healing) of wounds⁵. All five drugs have dominance of *Kashaya* (astringent) *Rasa* which reduce inflammation by reducing slough. Desloughing was done by *Vrana shodhana* property of *Panchavalkala Kashaya* which ultimately reduce microbial load of the wound. *Panchavalkala Kwath* is phytochemically dominant in phenolic group components like Tannins, Flavonoids which are responsible for anti-inflammatory, Wound healing, Antiseptic, Immunomodulatory, antioxidant, Antimicrobial, Anti-bacterial, properties. Tannins also proved to have antimicrobial property.

CASE REPORT

A 38-year-old male patient visited OPD of *shalya tantra* department of *Akhandanand* hospital with complaints of a big venous ulcer in the right leg with *Pseudomonas aeruginosa* infection. Before coming to *Akhandanand* hospital, patient had varicose veins and then venous ulcer had been developed. Regular dressing with betadine

ointment had been done in other hospital. But patient developed *Pseudomonas aeruginosa* infection in that ulcer.



Figure 1 Before *Panchavalkala kwath prakshalan* of wound

So, patient came here for further treatment.

Antibiotics sensitivity test was performed for *Pseudomonas aeruginosa*. According to patient's antibiotics sensitivity test for *Pseudomonas aeruginosa* infection, multiple antibiotics were resistant to *Pseudomonas aeruginosa* infection of that patient. So, it was difficult to treat wound of the patient. So, we had planned *Panchavalkala Kwath Prakshalan* of wound⁶. So, we had done *Panchavalkala Kwath Prakshalan* of Venous Ulcer for 2 times a day for 21 days. Before treatment, routine blood investigation was carried

CASE STUDY

out [Hb:13.5Gm%, Total RBC:4.87mill/c.mm, TLC:6400/c.mm (P:77, L:16, E:04, M:03, B:00), ESR:10mm, Platelet count:1,13,000, RBS:208.3mg/dl] Prior Procedure, Informed written consent was taken from the patient. *Panchavalkala Kwath* has been prepared as mentioned as *Kwath Kalpana* in *Sharangdhar Samhita*⁷. Patient was taken on the table in sitting position with right leg extended on table. Draping has been done. Under all aseptic precautions *Panchavalkala Kwath Prakshalan* was done with 10ml plastic syringe. Total 50 ml *Panchavalkala Kwath* was used for a single sitting procedure. This procedure was done twice a day for 21 days. After *Panchavalkala Kwath* Prakshalan daily dressing was done. After 21 days procedure, antibiotic sensitivity test for *Pseudomonas aeruginosa* was performed. Antibiotic sensitivity test for *Pseudomonas aeruginosa* was negative after 21 days treatment. No any complication had been noted during and after procedure. During the treatment, patient was advised to take healthy diet which includes green leafy vegetables, beans, fruits, roti. Patient had been advised not to take spicy food, junk food and alcohol. Patient was also advised to avoid long standing, ridings and travelling.

RESULTS AND DISCUSSION

Pseudomonas aeruginosa infection is more common opportunistic infection in hospitals. *Pseudomonas aeruginosa* organism is initially acquired from environmental sources but patient

to patient spread also occurs in hospitals and clinics. It is very difficult to treat *Pseudomonas aeruginosa* infection because it is resistance to multiantibiotic

Our ancient acharyas had described *vrana* very broadly. *Acharya Sushruta* had described *shasti Upakrama* for treatment of different types of wound. *Vrana prakshalana* was one of the treatment procedures which had been described by *Acharya Sushruta in shasti Upakrama*. Various drugs and its actions were described in detail by acharya *bhavprakasha*. *Panchavalkal* was one of them which was also known as *Vranapaha* i.e. healer of wound.

Here, we had done *Panchavalkala kwath prakshalan* of wound (Figure 2).



Figure 2 *Panchavalkala Kwath Prakshalan* of wound

Panchavalkala has *Vrana shodhana*, Desloughing, antimicrobial, antiseptic property. By virtue of this property *Panchavalkala kwath prakshalan* of wound had result in *Vrana shodhana* of wound. So, *Panchavalkala kwath prakshalan* had become effective against *Pseudomonas aeruginosa* which is resistant to multiantibiotic.

CASE STUDY



Figure 3 Wound after 21 days of *Panchavalkala Kwath Prakshalan*

CONCLUSION

This study highlighted *Vrana shodhana*, Desloughing, antimicrobial, antiseptic property of *Panchavalkala kwath prakshalan*. This study highlighted *Panchavalkala kwath prakshalan* efficacy against multiantibiotic resistant *Pseudomonas aeruginosa*.

CASE STUDY

REFERENCES

- 1 Harrison's Principles of Internal Medicine, Fauci, Braunwald, Kasper, Hauser, Longo, Jameson, Loscalzo, et al, editors, 2008, McGraw Hill Education, New York, pg.949
- 2 Harrison's Principles of Internal Medicine, Fauci, Braunwald, Kasper, Hauser, Longo, Jameson, Loscalzo, et al, editors, 2008, McGraw Hill Education, New York, pg.951
- 3 Harrison's Principles of Internal Medicine, Fauci, Braunwald, Kasper, Hauser, Longo, Jameson, Loscalzo, et al, editors, 2008, McGraw Hill Education, New York, pg.954
- 4 *Bhavprakash*, by *Bhavmishra*, *Bhavprakash Nighantu*, *Vatadi Varga*, chapter 6, Verse 15, Varanasi, *Chaukhambha Sanskrit Bhavan*; 2010, page no..507
- 5 *Bhavprakash*, by *Bhavmishra*, *Bhavprakash Nighantu*, *Vatadi Varga*, chapter 6, Verse 16,17,18, Varanasi, *Chaukhambha Sanskrit Bhavan*; 2010, page no..507
- 6 *Sharangadhara Samhita*, *Parushuram Shastri Vidyasagar*, *Madhyama Khanda*, Chapter 2, Verse 151, Page-164, *Krishnadas Academy*, Varanasi, 2000.
- 7 *Sharangadhara Samhita*, *Parushuram Shastri Vidyasagar*, *Madhyama khanda*, Chapter 2, Verse 1, *Krishnadas Academy*, Varanasi, 2000.