



ISSN 2456-3110

Vol 9 · Issue 7

July 2024

Journal of
**Ayurveda and Integrated
Medical Sciences**

www.jaims.in

JAIMS

An International Journal for Researches in Ayurveda and Allied Sciences



Maharshi Charaka
Ayurveda

Indexed

An Ayurvedic perspective of *Sannipataj Jwar* - Sepsis along with WBC morphology

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ABSTRACT

Background: Microscopic evidence based WBC Morphology would help *Ayurveda* physicians to give appropriate *Ayurvedic* treatment to Sepsis i.e. *Sannipataj Jwar* patients. Sepsis affected 49 million people in 2017 with 11 million deaths i.e. 1 in 5 deaths worldwide. **Objective:** To observe the correlation of Sepsis with *Ayurvedic Sannipataj Jwar* along with WBC Morphology. **Material and Methods:** It includes Literature Review, Initial assessment & enrollment of patients, Microscopic observational changes to correlate Sepsis with *Sannipataj Jwar*, Observation & Interpretation. **Results:** It shows the correlation of Sepsis with *Ayurvedic Sannipataj Jwar* along with WBC Morphology. **Conclusion:** This study finds the correlation of Sepsis with *Ayurvedic Sannipataj Jwar* along with WBC Morphology. This study would help *Ayurveda* physicians to give appropriate *Ayurvedic* treatment to Sepsis patients on the basis of evidence based WBC Morphology.

Key words: Sepsis, Septic Shock, *Sannipataj Jwar*.

INTRODUCTION

Sepsis is potentially a life-threatening condition that arises when the body's response to infection causes injury to its own tissues and organs. Sepsis affected about 48.9 million people in 2017 with 11 million deaths i.e., 1 in 5 deaths worldwide. In 2017, almost half of all global sepsis cases occurred among children, with an estimated 20 million cases and 2.9 million

global deaths in children under 5 years of age. Regional disparities in sepsis incidence and mortality exist; approximately 85% of sepsis cases and sepsis-related deaths worldwide occurred in low- and middle-income countries. Risk factors include young or old age, cancer, diabetes, major trauma, asthma, COPD, multiple myeloma, burns. The usual onset may be rapid (<3hours) or prolonged (several days). Initial stage of sepsis is followed by suppression of the immune system along with Signs and Symptoms include fever, increased heart rate, increased breathing rate, and confusion. There may also be symptoms related to a specific infection, such as a cough with pneumonia, or painful urination with a kidney infection, severe sepsis causes poor organ function or blood flow. Septic shock is low blood pressure due to sepsis that does not improve after fluid replacement. Sepsis is caused by many organisms including bacteria, viruses and fungi. Common locations for the primary infection include the lungs, brain, urinary tract, skin, and abdominal organs. qSOFA criteria for sepsis include at least two of the following three: increased breathing rate, change

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Submission Date: 14/05/2024 Accepted Date: 23/06/2024

Access this article online

Quick Response Code



Website: www.jaims.in

DOI: 10.21760/jaims.9.7.9

in the level of consciousness, and low blood pressure. Other potential causes of similar signs and symptoms include anaphylaxis, adrenal insufficiency, low blood volume, heart failure, and pulmonary embolism. Sepsis requires immediate treatment. The risk of death from sepsis is as high as 30%, while for severe sepsis it is as high as 50%, and septic shock 80%.

According to *Ayurved*, *Achaarya Charak* defined *Jwar* as *Pradhaan* in all types of *Vyadhi* i.e. 'देहेन्द्रियमनस्तापी सर्वरोगाग्रजो बली। ज्वरःप्रधानो रोगाणामुक्तो भगवता पुरा ॥ च.चि.३/४-५. *Achaarya Charak* also defined *Sannipata Jwar* along with *Lakshana* as क्षणे शीतमस्थिसन्धिशिरोरुजा। सास्रावे कलुषे रक्ते निर्भुग्ने चापि दर्शने। सस्वनौ सरुजौ कर्णौ कण्ठः शूकैरिवावृतः। तन्द्रा मोहः प्रलापश्च कासः श्वासोऽरुचिर्भ्रमः॥ परिदग्धा खरस्पर्शा जिह्वा सस्ताङ्गता परम्। शीवनं रक्तपित्तस्य कफेनोन्मिश्रितस्य च। शिरसो लोठनं तृष्णा निद्रानाशो हृदि व्यथा। स्वेदमूत्रपुरीषाणां चिराद्दर्शनमल्पशः॥ कृशत्वं नातिगात्राणां प्रततं कण्ठकूजनम्। कोठानां श्यावरक्तानां मण्डलानां च दर्शनम्॥ मूक्तत्वं स्रोतसां पाको गुरुत्वमुदरस्य च चिरात् पाकश्च दोषाणां सन्निपातज्वराकृतिः॥ च.चि ३/१०१-१०६. Meaning of all these *Lakshanas* are correlated with Sepsis in the point - Initial assessment and enrollment of patients.

MATERIAL AND METHODS

Literature Review



Initial assessment & Enrollment with written consent



Microscopic observational changes to correlate Sepsis with *Sannipataj Jwar*



Assessment criteria along with WBC Morphology



Observation, Interpretation & Statical Analysis

LITERATURE REVIEW

It includes *Ayurvedic* and Modern Medical Science References.

Initial assessment and enrollment of patients

Sannipataj Jwar Lakshanas can be correlated with Sepsis as follows:

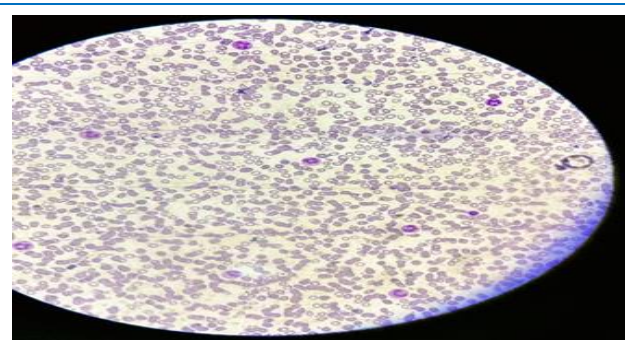
<i>Sannipataj Jwar Lakshanas</i>	Sepsis
<i>Kshane Daha & Kshane Sheeta</i>	Fever & Hypothermia; Temperature > 38.5 or < 35°C
<i>Asthi Sandhi Ruja</i>	Arthralgia, Myalgia
<i>Shiro Ruja</i>	Headache (due to hypotension or upper/lower respiratory tract infection)
<i>Saasraave Kalushe Rakte Lochane</i>	Conjunctivitis
<i>Saswanau Karnau & Karna Ruja</i>	Otitis media
<i>Kantha Shookairiva</i>	Pharyngitis / Laryngitis
<i>Tandra</i>	Fatigue / Malaise (sepsis / acute respiratory tract infection / hypotension)
<i>Moha</i>	Confusion / Loss of consciousness (septic shock / hypotension / delirium)
<i>Pralaapa</i>	Irrelevant speech (delirium?)
<i>Kaasa</i>	Cough (upper respiratory tract infection / pneumonia)
<i>Shwaasa</i>	Shortness of breath (tachypnoea / respiratory rate > 20 breaths per minute / Acute lung injury / Acute respiratory distress syndrome)
<i>Aruchi</i>	Loss of appetite / Anorexia (respiratory tract infection / sepsis)
<i>Bhrama</i>	Hypotension / reduction of cerebral blood flow
<i>Paridagha, Khara Sparsha Jihwa</i>	Dehydration (indicates need of fluid resuscitation / septic shock)

<i>Srastaangata</i>	Malaise / weakness / fatigue (sepsis / respiratory infection)
<i>Kapha Yukta Rakta Shteevanam</i>	Haemoptysis (respiratory infection / pneumonia)
<i>Shiraso Lothanam</i>	Restlessness / Septic encephalopathy
<i>Trishna</i>	Dehydration (septic shock / denotes requirement of fluid resuscitation)
<i>Nidraa Naasha</i>	Restlessness / Sleeplessness (delirium)
<i>Hridi Vyadha</i>	Hypotension / Tachycardia / pericarditis
<i>Chiraat and Alpa Sweda, Mutra and Purisha</i>	Dehydration / Anuria / Oliguria / Acute kidney injury / Constipation / MODS (Multiple organ dysfunction syndrome) / septic shock
<i>Krushatwam Naati Gaatraanaam</i>	Edema (due to hypoperfusion of tissues / hepatic injury / cute kidney injury / hypoxemia)
<i>Pratatam Kantha Koojanam</i>	Tachypnoea / ARDS (Acute respiratory distress syndrome) / ALI (Acute lung injury)
<i>Shyaava, Rakta Kotha and Mandala</i>	<i>Shyaava, Rakta Kotha and Mandala</i>
<i>Mookatwam</i>	Loss of voice (due to laryngitis)
<i>Sroto Paaka</i>	SIRS (Systemic inflammatory response syndrome)
<i>Udara Gauravam</i>	Hepatomegaly? / Edema in severe sepsis due to capillary leak;
<i>Chiraat Paakashcha Doshanaam</i>	Slowly progressive / latent pathological process (indicates chronic / recurrent infections in immuno-compromised individuals leading to sepsis / septic shock / delirium / death)
<i>Maranam</i>	Poor prognosis (MODS / delirium / septic shock)

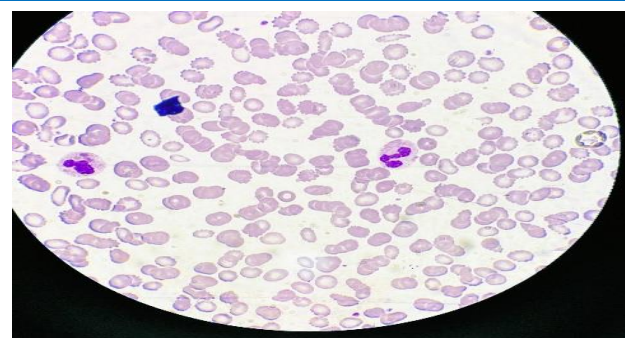
<i>Upadrava - Karnamoola Shotha</i>	Mastoiditis leading to meningitis and death
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Above reference is taken from the Article: *Sama Sannipata Jwara- Sepsis, SIRS, MODS, Septic Shock and Delirium* of Dr. Prasad Mamidi & Dr. Kshama Gupta. With the help of above reference *Sannipataj Jwar* can be correlated with Sepsis. One patient is enrolled in this study having Bacterial Sepsis.

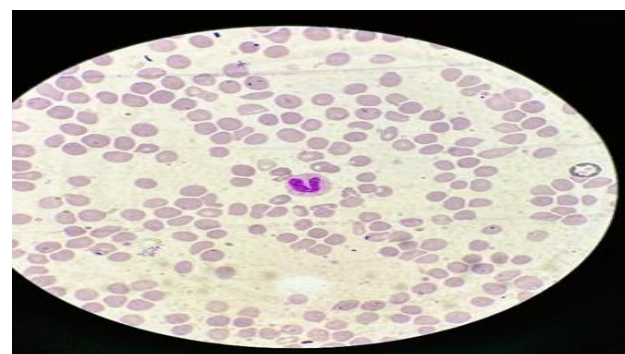
Microscopic observational changes to correlate Sepsis with *Sannipataj Jwar* along with WBC Morphologies - Precursor stages of Neutrophil i.e. Left Shift shown as follows:



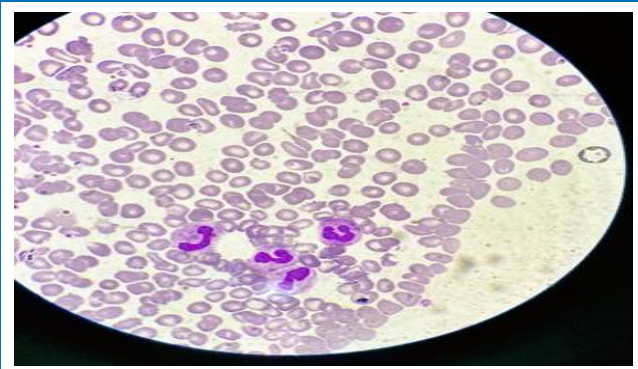
Neutrophils



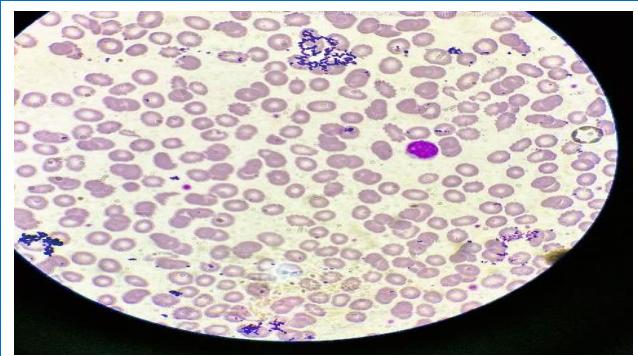
Hypersegmented Neutrophil



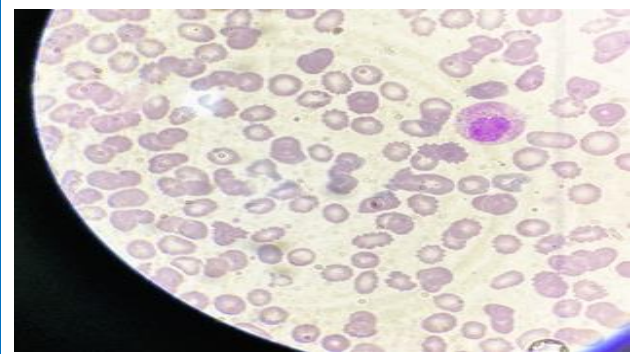
Band Form



Band Form



Metamyelocyte



Myelocyte

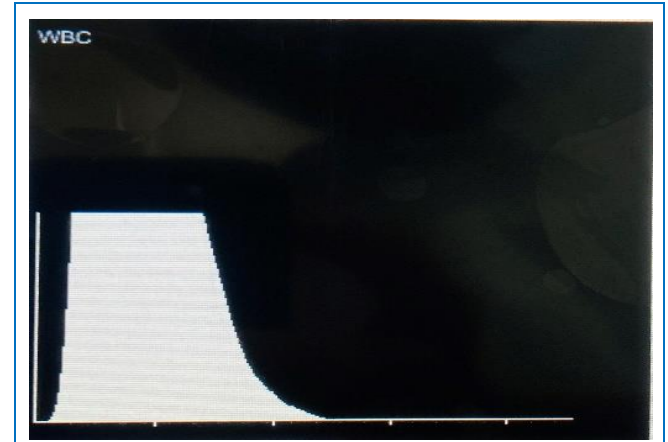
Above Images showing Neutrophilic leucocytosis with shift to left i.e., precursor developmental stages which includes Hypersegmented Neutrophil, Band form, Metamyelocyte & Myelocyte showing significance of Sepsis.

OBSERVATION AND INTERPRETATION

It is observed that *Sannipataj Jwar* can be correlated with Sepsis along with WBC Morphology with the help of Patient's Data as follows:

Patient had *Sannipataj Jwar Lakshanas* i.e., Sepsis having Total WBC Count 35,400 & Differential WBC

count includes Neutro-84 %, Lymphocytes-7%, Eosinophils-1%, Monocytes-8%, Basophils-0% showing Neutrophilic leucocytosis with shift to left s/o Sepsis.



WBC Histogram

RESULTS

This study shows the correlation of Sepsis with *Sannipataj Jwar* along with WBC Morphology.

CONCLUSION

This study finds the correlation of Sepsis with *Sannipataj Jwar* along with WBC Morphology. This study would help *Ayurveda* physicians to give appropriate *Ayurvedic* treatment to Sepsis patients on the basis of evidence based WBC Morphology.

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How to cite this article: Vaishnav Vinod Dhole, Vinayak N. Joshi, Snehal Mandal. An Ayurvedic perspective of Sannipataj Jwar - Sepsis along with WBC morphology. J Ayurveda Integr Med Sci 2024;7:69-73. <http://dx.doi.org/10.21760/jaims.9.7.9>

Source of Support: Nil, **Conflict of Interest:** None declared.
