



ISSN 2456-3110

Vol 6 · Issue 5

Sept-Oct 2021

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

Utility of Modern Diagnostic Tools in *Ayurveda*

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ABSTRACT

Doshas are considered to be functional parameters that auto regulate the physiology of body. Disequilibrium in state of *Doshas* and other components leads to pathological state. Different types of disturbances result in different disorders and in different forms. So, the approach to diagnose and to treat is also different. To reach probable diagnosis and to adopt probable treatment modality physician is required with various diagnostic tools. *Pareeksha* has been explained in classical texts by various *Acharayas*. They have also mentioned about various *Yantras* in *Ayurveda* mainly *Nadi Yantra*. With the advancement in medical field, varied imaging techniques can also be utilised in *Ayurveda* for diagnostic, prognostic and therapeutic purpose. Various imaging tools such as Electroencephalography (EEG), Magnetic resonance imaging (MRI), Computed tomography (CT scan), Ultrasonography (USG) and Electrocardiography (ECG) can be utilised to monitor any irregularity and to reach probable diagnosis. Hence an effort has been made to put forth an insight into the utility of imaging tools in *Ayurveda*.

Key words: Modern Imaging Tools, *Ayurveda*

INTRODUCTION

Ayurveda focuses on maintaining health of a person and further prevention of disease. Evaluation of patient health status is of prime importance. It is explained in *Samhitas* in detail. *Acharayas* have also mentioned about *Roga Rogi Pareeksha (Pratipatigyanam)* to obtain knowledge regarding diagnosis and prognosis of diseases and in view to correct the morbidity.^[1] *Roga Pareeksha* includes *Nidana Panchaka* and *Shat Kriya Kala*. *Nidana Panchaka* describes *Nidana, Purvarupa, Rupa,*

Upasaya-Anupasaya and *Samprapti* of disease whereas *Shatkriyakala* provides time for treatment at various stages viz. *Sancaya, Prakopa, Prasara, Sthanasamshraya, Vyaktavastha* and *Bhedavastha*. *Rogi Pareeksha* includes *Trividha Pareeksha, Chaturvidha Pareeksha, Shadavidha Pareeksha, Astasthan Pareeksha* and *Dasavidha Pareeksha*. *Roga-Rogi Pareeksha* together forms protocol for examination. Diagnostic tools for diseases enumerated in the *Ayurvedic* classics help in standardising the clinical approach to arrive at specific diagnosis. Changes in *Dosha, Dushya* are subtle and arriving at probable diagnosis is difficult so it is the need of an hour to utilise various modern tools that helps in early diagnosis and disease condition. In *Ayurveda*, *Acharya Sushruta* has explained about *Naadi Yantra, Shalaka Yantra* in order to remove *Shalya* or any foreign particle from body and to know about direction, size and shape of *Shalya*.^[2] various modern imaging tools are Electroencephalography (EEG) that detects abnormalities in your brain waves. Magnetic resonance imaging (MRI) that produces three dimensional detailed anatomical images. Computed tomography (CT scan) that combines a

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Submission Date: 13/09/2021 Accepted Date: 16/10/2021

Access this article online

Quick Response Code



Website: www.jaims.in

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Ayurveda Organization, Vijayapur,
Karnataka (Regd) under the license CC-
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series of X-ray images taken from different angles around your body. Ultrasonography (USG) that uses high-frequency sound waves to scan the internal organs of the body. Electrocardiography (ECG) records the pattern of spread of electrical voltage generated by heart. Based on the description mentioned in ancient Ayurvedic classics related to diagnostic tool and methods are appreciable. Further for better understanding of diseases and to reach diagnosis modern diagnostic and imaging tools is also need of an hour.

AIMS AND OBJECTIVES

To signify the utility of imaging tools in *Ayurveda*

MATERIALS AND METHODS

In present study different concept has been reviewed, compiled from existing *Ayurvedic* literature, modern texts and various journals. Further understanding has been put forth in regards to proposed title.

DISCUSSION

EEG In *Ayurveda*

Nervous system activity propagates through nerve impulses which are nothing but electrical forces. EEG shows abnormal activity over occipital, temporal lobe. EEG assesses function of *Shiras* (Brain). Amongst *Doshas* specifically *Vata* and *Kapha* regulates function in *Shiras* and if it gets obstructed it disturbs the activity of brain. In condition like *Peenasa* there is an obstructive pathology of *Vata* and *Kapha* along with alteration in *Gati of Prana Vata* and *Udana Vata*. It is already mentioned in *Ayurveda* “*Nasa hi Shiraso Dwaram*” thus can be reflected in EEG through changes in the waves.^[3] EEG can also be utilised in other conditions like *Nidra Vikaras*, *Unmada*, to locate the site of lesion. Importance of EEG lies is intensity of waves and pattern of electrical activity.

MRI In *Ayurveda*

Magnetic resonance imaging uses strong magnetic field to create image. *Acharya Dalhana* has explained about *Apasmara* with feature of “*Apagamsmruti*” to be associated with “*Vibatsachesta*” due to

derangement of *Dhi*, *Smriti* and *Satva*. MRI may show alteration in occipital lobe in *Apasmara*. It can thus be used in various CNS related disorders, for preoperative staging of *Guda Arbuda*, evaluation of *Sira Granthi*. Thus, it has its significance.

CT In *Ayurveda*

Computed Tomography scan also known as computed axial tomography scan that produces cross sectional images. CT is related to detail imaging of tissues including bones, soft tissues and blood vessels. It may be utilised in conditions like *Gulma*, *Arbuda*, *Yakruta Roga*, *Udara Roga*, *Pakshaghata* to rule out any abnormality as it provides the view from all sides. CT is not recommended in *Garbini Avastha*.

USG In *Ayurveda*

It produces an image of internal body organs. It can be utilised in disease conditions like *Artava Kshaya* to visualise the region for any blockage, *Udara Roga* to find stage of morbid *Doshas*, *Udakodara* to know about amount of fluid, *Garbha Vriddhi* to assess gestational age and fetal development, *Kamala* to see any structural changes, *Mootraghata* to assess any structural abnormality, *Granthi Roga* to know about location of *Granthi* and its size. It also serves as therapeutic measure in *Ashmari*, for drainage in case of *Yakritvidradhi*.

ECG In *Ayurveda*

Derangement in the components of *Hridaya* is responsible for alteration in biochemical parameters.^[4] ECG records the pattern of spread of electrical voltage generated by heart to infer concerning *Doshic* irregularities and alteration in *Doshagati (Vyana Vata)* with the changes in the pulse waves that is signified through vector. Normalcy can be understood through *Prakruta Gati of Doshas*. Conditions like *Prameha*, *Medoroga*, *Sthoulya* associated with high fasting blood glucose, High triglycerides and central obesity are considerably related to major and minor ECG abnormalities.^[5] *Shodhana Karma* such as *Vamana Karma* may be attributed to sympathetic stimulation with alteration in P wave amplitude and T wave inversion.^[6]

Virechana Karma is determined with number of *Vegas* where water and electrolyte imbalance is observed that shows affect on Cardiac action potential, thus ECG has its significance.^[7]

CONCLUSION

In *Ayurveda* basic methods in diagnosing are explained in detail whereas Knowledge about the utilisation of various modern imaging diagnostic tools is also appreciable. In *Ayurveda*, Status of improvement after treatment needs to be assessed through these tools. The treatment outcome is to be analysed in order to minimize various complications and to put data on prognosis. All these modern tools are practiced with clinical examination methods told in classics.

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How to cite this article: Monika Gupta. Utility of Modern Diagnostic Tools in Ayurveda. J Ayurveda Integr Med Sci 2021;5:288-290.

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