WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.453
Volume 13, Issue 15, 127-135. Review Article ISSN 2277–7105

ROLE OF AYURVEDIC MEDICINE IN THE MANAGEMENT OF HYDROCEPHALOUS

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Article Received on
12 June 2024,
Revised on 03 July 2024,
Accepted on 24 July 2024
DOI: 10.20959/wjpr202415-33281

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ABSTRACT

A chronic neurological disorder called hydrocephalus is brought on by an abnormal build-up of cerebrospinal fluid in the brain's ventricles as a result of excessive secretion, poor circulation, and/or poor absorption of CSF. If left untreated, it typically affects children and can result in mental retardation or even death. The management of the Ayurvedic medical system is based on a very scientific methodology. Hydrocephalus can be effectively managed with its range of management principles and medications.

KEYWORDS: Hydrocephalus, Sheershambu roga, Ayurvedic system.

INTRODUCTION

A chronic neurological condition called hydrocephalus is characterized by an abnormal build-up of cerebrospinal fluid in the brain's ventricles as a result of poor circulation and/or absorption.[1] Narrowing of the CSF channels, perinatal infection, and inflammation- induced intraventricular haemorrhage are possible causes of obstruction in neonates, particularly in low birth weight or malformed babies.

Paediatric hydrocephalus is less commonly associated with genetic disorders or abnormal growths inside the skull. It has a detrimental effect on children's growing brains. It has a high death rate and renders survivors mentally retarded if improperly treated. It is estimated that between 0.5 and 0.8 cases of congenital and infantile hydrocephalus occur for every 1000 live births and stillbirths in the United States and Europe.[2,3,4] The Ayurvedic medical system offers a great way to treat this illness. It is known as Sheershambu roga in Bhaishajya

Ratnavali and is classified as an Atidushchikitsya (extremely seldom curable) ailment in Ayurveda. Children who have dental decay are more likely to get this illness.[5]

Causes

A) The type of hydrocephalus known as acquired hydrocephalus is usually brought on by an injury or illness and can occur at birth or in adulthood.

B) Congenital hydrocephalus is a condition that manifests at birth and can be brought on by either genetic abnormalities or events that take place during fetal development.

C) Communication breakdown (obstructive) Hydrocephalus is a condition in which one or moreof the ventricle-to-ventricle passages are blocked from supplying CSF. This enlarges the pathways upstream of the block and raises intracranial pressure.

D) While it can happen to anyone at any age, normal pressure hydrocephalus is most frequentlyseen in the elderly. It is distinguished by dilated ventricles in the spinal column that have normal pressure.

E) Hydrocephalus Ex-vacuo: This condition mainly affects adults and arises from brain damage caused by degenerative diseases such as Alzheimer's disease, stroke, or trauma that may resultin shrinkage of the brain's tissue.

Pathophysiology

The choroid plexus, which is housed inside the lateral, third, and fourth ventricles, is primarily responsible for producing CSF. It passes through the ventricular system via the cerebral aqueduct, also known as the aqueduct of Sylvius, from the lateral ventricle to the third ventricle and the foramen of Monro from the third to the fourth ventricle. Part of it continues to circulate around the spinal cord and in the spinal cord's central canal after exiting the fourth ventricle through the median foramen of Magendie and two lateral foramina of Luschka.

Arachnoid granulations that develop into dural venous sinuses, particularly the superior sagittal sinus, are the primary sources of CSF absorption. The venous sinuses absorb CSF, which then enters the systemic circulation. The daily output is around 500 ml, with an average CSF amount of about 150 ml. This indicates that there are three replacements of the whole CSF volume per 24 hours. The "bulk flow" concept states that CFS moves slowly from the locations of production to the sites of absorption. Hydrocephalus can arise due to any blockage, either functional or physical, in the ventricular system, subarachnoid space, or venous sinuses. CSF flow inside the ventricular system may be obstructed by a gliosis or

obstructive lesion. CSF absorption into the systemic circulation may be hampered by subarachnoid space inflammation or scarring, as well as by increased venous pressure inside the venous sinuses.[6,7] The whole volume of the brain, CSF, and blood inside the skull is constant, according to the Monro-Kellie concept. A reduction in volume in one compartment must be accompanied by an increase in another, or else the head's pressure would rise, as in the case of hydrocephalus. Pressure-induced atrophy and brain injury are caused by transependymal extravasation of CSF into the brain tissue, which is brought on by elevated ICP.[8]

Symptoms of Hydrocephalous

Hydrocephalous is manifested as enlarging head size, delayed closure of fontanel and approximation of suture line. Symptoms of headache, nausea, vomiting, personality and behavior changes such as irritability, head banging, apathy and drowsiness develops with advancing progression of disease. Delay or problem with the developing milestone.Common symptoms in this age group include:

Headache, sluggishness, loss of coordination or balance, loss of bladder control or needing to urinate often, vision problem, decline in memory, concentration and other thinking skills that may affect job performance.

Sign of Acute Hydrocephalus

Acute hydrocephalus is a potentially fatal condition that can cause brain herniation, transtentorial herniation of the temporal lobe, or cerebellar herniation into the foramen magnum. The patient may present with a coma, autonomic dysfunction, loss of brain stem reflexes, and a dilated, nonreactive ipsilateral pupil. To release the pressure, rapid neurosurgical intervention is needed.[8]

Sign of congenital Hydrocephalus

Most cases of congenital hydrocephalus occur at birth. Congenital hydrocephalus is indicated by an abnormally big head. Numerous other symptoms, such as a tense and bulging fontanelle, a disjunction of sutures, a thin and shiny scalp with prominently visible veins, stiff arms and legsprone to contractions, an outlook akin to "the setting sun" (eye pupils possibly close to the lower eyelid), breathing difficulties, poor feeding, an unwillingness on the part of the infant to bend or move their neck or head, and delayed developmental stages, are also linked to congenital hydrocephalus. Macewen sign is a "cracked pot" sound on percussion on the cranium. Individuals may exhibit high-pitched crying, irritability, drowsiness, vomiting,

seizures, delayed sexual maturation, and both. The supranuclear origin of the failure of upward gaze is attributed to pressure on the tectal plate. Other features of dorsal midbrain syndrome, also known as Parinaud syndrome, may be observed in severe cases of hydrocephalus that remain untreated.

Sign of Acquired hydrocephalus

At any age, acquired hydrocephalus can happen. Headache, neck pain, nausea, vomiting fits, sleepiness, lethargy, irritability, seizures, confusion, disorientation, blurred vision, diplopia, incontinence of the bladder and bowel, instability of gait, balance issues, anorexia, personality changes, and memory issues are among the symptoms. Urinary incontinence, dementia, and gait disorders make up the traditional Hakim triad of non-proliferative hypophosphatemia. It may take months or years for NPH signs and symptoms to appear. Wide-based gait is the hallmark of the classic gait impairment. As the disease worsens, patients may reach a point where they are apraxia and are unable to move. Although reflexes may be heightened with orwithout the Babinski response, muscle strength is typically normal. Late-stage frontal release symptoms, such as grasping and sucking reflexes, may manifest.

Evaluation

Radiological imaging, CSF pressure measures, and clinical symptoms are often used to diagnose hydrocephalus. The patient's age, the kind of the blockage, where it is located, how long it lasts,and how quickly it starts all affect the hydrocephalus's clinical characteristics.

HYDROCEPHALUS CAUSES INDICATED IN AYURVEDIC BOOKS

1) Dustambupanat atishaityat va[9] (consuming excessively cold or unclean water).
2) Asatmyabhojyanashnatahsurayaatyarthpanat[5] (intake of asatmya and excessive alcohol)
3) Asatmyabhojyanashnatahsurayaatyarthpanat[5] (intestinal worms and trauma)
4) Pavanpradoshat[9] (vitiation of vata)
5) Dauhrida aumanana and vata prakopa might cause abnormalities in the developing foetus.[10] When Garbhini Paricharya is used improperly, it can also result in Garbha Vrikriti,which can lead to hydrocephalus.

SYMPTOMS OF HYDROCEPHALOUS IN AYURVEDIC TEXT

The prodormal symptoms of the early stage of Shirshambu disease include jihvaliptata(deposits over dorsal surface of tongue), nidratva(excessive sleep), daurbalya(weakness), shwas- putita(bad breath), gadh vitakta (hardness of stool), After a

brief period of above mentioned prodormal symptoms patient develops fully fledged sign and symptoms of the disease. The patient feels shirsah vedana ghorah(severe headache), shrut drishti tikshnata (pain and prickingsensation in ears and eyes), mutra alpata(oliguria), Krishna vitakta (passes black colored stool), dhamani vegavahini (increased palpitation), tvak ruksha ushnata (dryness and burning sensation of skin), chardi (vomiting), kaninaka vishamta(disorientation of eyeball), much vaivarnya (discoloration of facial region), nidraya(drowsiness/sleepiness), danta gharsanam (teeth grinding), kandurosthasya nasaya (itching sensation around the lips and nose), akshepa (convulsion), rakta netrata (redness of eye), pakshaghat(hemiplegia), pralap (disorientation of speech).

HYDROCEPHALUS MANAGEMENT IN ACCORDANCE WITH AYURVEDA

Fundamental ideas mentioned in Bhasajya Ratna-vali[11]

1. Nidan parivarjan (cause removal)
2. The primary rechana (use of luxatives) in shamshodhana
3. Mutrapravatak (diuretic use)
4. Raktadosh Shamak Chikitsa (medication for blood purification)
5. Vatashamak Chikitsa (since vata vitiation is a major causative factor)
6. After shaving all hair from the scalp, cover the head with warm cloths.
7. Since this disease is urdwajatrugata vikar, taking medication at night may be more advantageous.[12]

Medication Aided in the Treatment of Hydrocephalus

Kwath Peetmulyadi: Yavkshar is used in combination with a decoction prepared from peetmuli(Rheum emodi), ananta, amalaki, trivrita, shati, Tikta (Picorrhyza kurroa), gopvadhu (syamlata), abdam (motha), dhanyak, madhuk, haridra, haritaki, twak, ela, and patra.[12]

Churna Salilshoshan: It should be taken with milk and contains the following in equal amounts: Ras sindoor, yavkshar, peetmuli, trijatak, bharangi, ela, abhaya, and indravaruni.[13]

Ghrita Kumkumadya:- It works well with all varieties of shiroroga.[14] According to Ayurveda, ghrita are particularly recommended for the disorders ofurdwajatrugata (above the clavicles). When taken as medicated grita, rakta dosh har medicines and other beneficial medications maybe more effective in breaking the pathology of hydrocephalus. Only drugs that are lipid soluble can pass through the blood-brain barrier. Grit may make it easier for medications to enter the brain tissue and take effect. Because glycerol is produced when fat is

metabolized in the liver's capillary epithelium, grita by itself may lessen brain edema.[14]

Rasataila[13]: It is applied externally to the scalp to cover the hairless area. Katu tail, or mustard oil, is one of its ingredients. It is also mixed with kalka dhattur, dhataki, murva, madhuk, vid lavan, shunthi, neelini, Krishna, katphala, katuka, sugandh bala, and kajjali.

Gnibhaskar Rasa:- The ingredients of agnibhaskar rasa are bhasma of swarnamakshik, vaikrant, rajat, lauh, gandhaka, and pard. Rakta Chitrak and Brahmi Swarajas give Bhavna. Plumbago rosea, the ingredient raktachitrak, has anti-proliferative properties. A study assessed the effects of plumbagin and ethanolic root extract of plumbago rosea on human lymphocytes and SK-MEL 28 melanoma cell lines. This demonstrated plumbagin's anti-cancer properties; its anti-cancer properties are amplified when combined with plumbago rosea extract.[15]

Rasasindur: Rasasindur can treat any kind of disease anywhere in the body and has the ability to treat jwarnashak, sarvashothnashaka, and sarvavata nashak effects. It also keeps the nervoussystem functioning and all other bodily indriyas in check.[16]

Coconut oil: The medium-chain fatty acids in coconut oil bypass the digestive tract and go straight to the liver. They serve as an instant energy source for ketogenic diets, which are extremely high in fat and low in carbohydrates. This kind of diet helps lower the frequency of seizures in kids with epilepsy. Coconut oil contains lauric acid, which has antiviral, antibacterial, and antifungal properties. Peetmuli, or Rheum emodi, has long been used for its antitumor, purgative, diuretic, and antiseptic properties.[17] Hence, this medication is used to treat hydrocephalus. Rhubarb water extract contains anthraquinone, aloeemodin, rhein, emodin, chryso-phenol, and physcion. In a study using ultra performance liquid chromatography-PDA method, anthraquinone was found in water extract of rhubarb, in CSF of patients with traumatic brain injury, and in the ipsilateral cortex of rats with traumatic brain injury after oral water extract of rhubarb. The primary component of rhubarb, physcion, has been shown to protect against brain damage.[18] In Sprague Dawley rats, rheum emodi rhizome extract is not toxic.[19]

Use of Ayurvedic Garbhini Paricharya (antenatal care): Many issues pertaining to fetuses and mothers can be avoided by following the dietary recommendations, behavioral changes, and medicinal recommendations made in the Ayurvedic classics.[20,21,22,23] encouraging

pregnant women to use ayurvedic management to reduce the negative effects of modern medications. Preeclampsia, oligohyramnios, polyhyramnios, hypertension to mother, intrauterine hypoxia, intrauterine growth retardation, and other fetal anomalies can all be avoided with the help ofAyurvedic garbhini paricharya.

CONCLUSION

Avoiding garbhopghatkar bhavas and using the ayurvedic garbhini paricharya aretwo ways to manage the child from conception on. If hydrocephalus develops, it should be treated as soon as possible using the previously mentioned medications and guidelines.

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