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A FOOD THOUGHT FOR IMPLEMENTING VARIOUS PATHYA KALPANAS AS AN ENTERAL FEED IN CRITICALLY ILL PATIENTS ADMITTED IN EMERGENCY UNITS

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ABSTRACT

Malnutrition (sometimes called under nutrition) is the state in which a deficiency either of total energy or of protein (or other nutrients) leads to a reduction in body cell mass and organ dysfunction. It can be the result of any combination of inadequate intake, reduced absorption or increased requirements. Malnutrition has been shown to be strongly linked to increased length of stay in hospital, increased incidence of complications and increased mortality. Nutritional status in critically ill patients can be difficult to assess. Probably the most useful measure of nutritional status is a targeted history and examination. Enteral nutrition is strongly preferred over parenteral nutrition, if the gastrointestinal (GI) tract (from the jejunum distally) is functional and accessible without contraindications to its use. Pathya Kalpana, which are prescribed for patients. Contain same basic preparations like Manda, Peya, Yavagu etc. have been described, which are easily digestible and have curative effects too. Moreover, commercially available feeds in the hospital are limited and not much nutritious, to add-on the same Pathya Kalpana's & various medicated Yavagu's explained by Charaka can be taken into account. Though there is a great difference of dietary applications mentioned in the ancient classical Ayurvedic texts and in present digital Age. The concepts of nutrition and dietetics is a treasure trove in Ayurveda, which needs further exploration.

KEYWORDS: Enteral nutrition, Pathya Kalpana, critically ill, Emergency units.

INTRODUCTION

Malnutrition (sometimes called under nutrition) is the state in which a deficiency either of total energy or of protein (or other nutrients) leads to a reduction in body cell mass and organ dysfunction. It can be the result of any combination of inadequate intake, reduced absorption or increased requirements. Malnutrition is common in hospital patients throughout the world and tends to be an under recognized and under treated problem. It has been estimated that up to 60% of hospital patients in the UK are either malnourished or are at risk of becoming malnourished and figures for developing countries are likely to be even higher. Malnutrition has been shown to be strongly linked to increased length of stay in hospital, increased incidence of complications and increased mortality. The aim of nutritional support is to prevent and treat both macro- and micronutrient deficiencies. The patients likely to benefit most are those who are already malnourished and who would otherwise undergo a long period of starvation. There is now evidence that nutritional support can reduce length of stay and the incidence of complications in patents in intensive care.[1]

Nutritional status in critically ill patients can be difficult to assess. Probably the most useful measure of nutritional status is a targeted history and examination. One such method which is widely accepted is known as the Subjective Global Assessment. It includes weight change, change in food intake, GI symptoms, functional Impairment, on physical examination loss of subcutaneous fat, muscle wasting, oedema and ascites is seen.[16]

The three important parts of Ayurveda science are the Ausadha (medicine), Aahara (diet), and Vihaar (work out, exercise etc.). Aahara Kalpana is one of the important parts. All details like ingredients-preparative method quantity of prepared formulation have been carefully mentioned in Ayurveda. The precisely constituted, calculated and cooked food is known as Pathya (ideal food) to be useful for good health. According to Acharya kashyapa the diet (Aahara) is known as Mahabheshaj (supreme medicine).[2] No medicine can do good for the patient who does not follow the pathya. Importance of aahara and pathya towards the maintenance of good health since it will keep sapta-dhatu and tri-dosha in healthy state which are the prime elements of healthy status. Ayurveda believe that complexion, voice, longevity, happiness, strength; growth (physical health) and intelligence (mental health) depend upon the types of aahara (food materials) which an individual consumed. Main objective of describing Aahara Kalpana is to highlight the role of diet in maintaining health as well as

treating various aliments like-Dosh, Dhatu, Mala, Agni in any individual and considered very importance in Ayurveda.

Pathya kalpana, which are prescribed for patients. Contain same basic preparations like, manda, peya, vilepi, yavagu and mamsa rasa. Certain specific dietetic preparations (aahara kalpana) as Manda (liquid gruel), Peya (thin gruel), Yavagu (gruel), Vilepi (thick gruel), Krisara (thick paste gruel), Yusha (soup), mamsa rasa (meat soup) etc. have been described, which are easily digestible to increasing order and have curative effects too. However, in case of pathya kalpana, the liquid media taken for the preparation are generally the decoction of medicinal herbs as required.[14] So above pathya kalpana can be administered as a feed along with that same can be done siddha with the Charkokta Yavagu dravya's and can be used as add on effect to the ongoing treatment. Because most of pathya kalpana's are in semisolid form or change in consistency can be made according to the requirements, so as to easily pass through NG feeding tube, will definitely help in Agnidipana, vatanulomana, etc. as per their karma.

OBJECTIVES

- To understand the concept of pathya kalpana.
- To evaluate the role of pathya kalpana & it's availability as an enteral feed in critically ill patients admitted in emergency units.

MATERIALS AND METHODS

Literature search- Ayurvedic textbooks, Brihattrayi and Laghuttrayi were mainly consulted for this review study. Supportive texts of contemporary science. Reference from internet and journals.

METHODOLOGY

Nutritional support can be given through one of three routes:

1. Oral
2. Enteral – via a tube directly into gastrointestinal tract
3. Parenteral – intravenous (via either peripheral or central vein).

Enteral Nutrition[3]

Enteral nutrition is strongly preferred over parenteral nutrition, if the gastrointestinal (GI) tract (from the jejunum distally) is functional and accessible without contraindications to its use. The potential benefits of enteral feeding are:

- Maintains mucosal protection
- Supplies gut-preferred fuels (glutamine, glutamate & Short chain fatty acids)
- More physiological
- Prevents cholelithiasis
- Less costly & easier to maintain.

  EN contraindicated when:
- GI causes
- Cardiac causes
- Lack of access
- Complications of enteral feeding (pulmonary aspiration, severe diarrhea, intestinal ischemia)

Which enteral feed to use?

There are many commercially prepared feeds available and some hospitals prepare their own either using commercially prepared dried feed or by following a recipe with normal foodstuffs as ingredients and then blending them to a consistency that will pass through a feeding tube.[1]

- **Hospital-prepared feeds**

Recipes vary according to country and available ingredients but can include hard-boiled eggs, milk powder, soya, maize oil, rice, squashes, flour, sugar and fruit. These hospital-prepared feeds are much cheaper than commercially prepared feeds but can block tubes and some recipes have been shown to give unpredictable levels of both macro- and micronutrients. In addition, they may contain contaminated ingredients and are not sterile. As a result, they must not be used for post- pyloric feeding or in patients with achlorhydria. These feeds should only be used where commercial feeds are either not available or not affordable.

- **Polymeric preparations**

These contain intact proteins, fats and carbohydrates, which require digestion prior to absorption, in addition to electrolytes, trace elements, vitamins and fibre. Fibre is broken down by colonic bacteria to produce a variety of compounds including butyric acid, an energy substrate for colonic enterocytes. These feeds tend to be lactose-free as lactose intolerance is common in unwell patients. Commonly used ingredients include the protein

casein (from milk), soy protein, maize and soya oils and the carbohydrate maltodextrin. The vast majority of patients can be given standard polymeric feeds.

- **Elemental preparations**

These preparations contain the macronutrients in a readily absorbable form (i.e. proteins as peptides or amino acids, lipids as medium chain triglycerides and carbohydrates as mono- and disaccharides). They are expensive and only really indicated for patients with severe malabsorption or pancreatic insufficiency.

Role of pathya kalpana as an enteral feed

Use of Kalpana with consideration of other elements makes the Dravyas suitable for human body. The Aahara Vargas like Shooka Dhanya (cereal grains), Shami Dhanya (legumes), Mamsa (meat) and Shaka (vegetables) cannot be used without applying Kalpana. So that in Brihattrayi all three Acharyas have mentioned Kritanna Vargas to explain the different Kalpanas made by Dravyas of other Aahara Vargas. In other words, Kritanna Varga/ Ahara Kalpana is applied aspect of described Aahara Vargas.[11] It consists of prepared foods, methods of preparing of different type of food items like Manda, Peya, Yavagu, Anna, Vilepi, Yusha, Krisara, Sattu (floor of Rosted paddy) etc with their method of preparations and properties.[4] (Table 1)

Table 1: Pathya kalpana and their uses.

Sr. No.	Pathya Kalpana	Method of preparation	Uses
1.	Manda[5]	The filtered liquid portion obtained after boiling one part of rice with 14 parts of water.	Lagu, Sheeta, Deepana (increase in appetite), Pachana(increase in digestive capacity), Grahi (reduces water content in faeces), Vatanulomaka (maintains normal functioning of Vata humour), Kaphaghna (pacify Kapha humour)
2.	Peya[6]	One part of rice and 14 parts of water are boiled consistency should be liquid.	Laghu, Deepana, Pachana, Vatanulomaka, Dhatupushtikara (Nourishes basic elements)
3.	Vilepi[7]	One part rice cooked with four parts of water the consistency should be thick like paste.	Deepan, Pachana, Basti shodhan, Laghu (light in digestion), Madhur (sweet), Brimhana, Hridya, and Pitta Nashak., Deepana, Rochaka (Enhances taste), Tarpana, Grahi, Vrushya (Aprodiasiac).
4.	Yusha[8]	One part of mudga with 16 parts of water boiled till the Mudag is	Kapha – Pitahara, Grahi, Pipasa, Jwarahara, Laghu, Santrapana, Balya

		completely cooked	
5.	Yavagu[9]	Prepared with 6 times water to nearly thick (less thick from Vilepi) or semisolid consistency.	Manda Jatharagni, Before Siravedha, Trushna, Unmaada.
6.	Mamsarasa[10]	One part of meat with four parts of water boiled till the meat is cooked completely	Prinana(nourishing), Hridya, Bal Vardhanam, Shukravardhan, Shwas Kaasa Kshayapaha, Vaat-Pitta-Bhramahara, Vrishya etc.

Implementation of Yavagus mentioned by Acharya Charaka as an enteral Nutrition

28 Types of Yavagu are mentioned by Acharya Charaka in the Apamarga Tanduliya Adhyaya. These Yavagu are made up of Aushadhi (drugs) Dravya (liquid) and rice grains etc. The number of drugs is not mentioned here as because it depends on the power of Jatharagni. The amount of Aushadhi dravyas varies from person to person depending upon some factors like Dosha, Agni, Bala, Vaya, Vyadhi, Dravya and Koshtha.(Table 2)

Table 2: Showing the types of Yavagu mentioned by Acharya Charaka.[12]

Sr. No.	Ingredients of Yavagu	Effects
1.	Pippali, Pippali mula, Chavya, Chitraka, Shunthi	Agni Deepak, Shula nashaka
2.	Kapithha, Bilwa, Changeri, Takra, Dadima	Pachaneeya, Grahi
3.	Goat milk mixed with half amount of water along with Hrrivera, Utpala, Mustaka	Raktatisara Nashaka
4.	Somaraji boiled Yavagu	Vishaghana
5.	Mridvika (Draksha), Sariva, Laja, Pippali, Madhu, Shunthi	Pipasa nashka
6.	Yavagu made with Dashmoola	Kasa, Shvasa, Hikka, Kapha nashaka
7.	Mamsa rasa shaka, Tila, Urada made Yavagu	Varcha karaka (increase the amount of stool)
8.	Seeds of Amra, Jambu, Dadima, Bilwa boiled Yavagu	Samgrahi (decrease stool formation)
9.	Gokshura, Kantakari, Phanita	Mutra kriccha nashaka

Amongst the yavagu's mentioned in the Charaka, some of the above mentioned can be taken in the account according to the indications of it. As mostly in emergency unit's patients complaining of raktatisara, vishapana, acute exacerbation of Kasa, Swasa, Hikka are admitted, and most of later on develop trushna, agnimandya, malagraha, shoola and malabheda on various drug exposure and pathophysiological changes.

Role of Agni: Agni is the jatharagni (digestive fire) and dhatwagni (metabolic fire) of the body. Agni is the sole cause for existence of life and its extinction leads to death. Its proper maintenance helps to live a long life and its impairment gives rise to many diseases. Agni is responsible for colon strength, health, enthusiasm, plumpness, complexion, Ojas, and Teja. Amongst this Samagni is normal state and all others are abnormal state of Agni.[14] Improper functioning of Agni leads to various gastrointestinal disorder as well as various metabolic disturbances.

Therefore, main principle of treatment of all disease as per Ayurveda is to restore and to strengthen the Agni. Aahara Kalpana serves the same purpose. Also, it enhances and maintains Agni and helps in healthy as well as diseased state.

DISCUSSION

The determination of the effect of nutrition alone on any possible outcome is complicated by the fact that the severity of illness and the number of comorbidities encountered among adult intensive care unit (ICU) patients is increasing.[15] Furthermore, the large heterogeneity of the ICU population potentially reduces the external validity of the recommendations, which should be seen as a basis to support decisions made for each patient on an individual basis.

There are many commercially available feeds in the form of soya milk, fruit juices, polymeric preparations, pulmoclear powders, protein powder, plain milk, or plain mugdha kadhana, tomato soup, kanji prepared at home, which are used in day today practices, due to long standing stays in the hospital, most of the options from the above mentioned items get exhausted or relatives are not able to make available for the patient, and over the time patients starts wasting and losing weight due to under nourishment.

As in patients, fit for enteral feed around 180-200cc/ feed is recommended for maintaining the nutrition and around 10-12 feeds per 24 hours are given according to nutrition status, hydration status of the patient, so above pathya kalpana can be administered as a feed along with that same can be done siddha with the Charkokta Yavagu dravya's and can be used as add on effect to the ongoing treatment. Because most of pathya kalpana's are in semisolid form or change in consistency can be made according to the requirements, so as to easily pass through NG feeding tube, will definitely help in Agnidipana, vatanulomana, etc as per their karma mentioned above in the table, moreover charkokta yavagus mentioned in sutrasthana

can also be used as a feed, because they are disease specific, which can be as add-on for the ongoing treatment, which will help in both ways as a nutrition and medication.

Moreover, sometimes alternative parenteral nutrition strategy can be used in the form of Albumin infusion, Peripheral TPN solutions, Amino acids, Smoflipid, but again they are not easily available, specific indications, requires close monitoring, complications are relatively more and are costly. So where ever EN is contraindicated then PN comes in role. Till then enteral feed is preferred.

Role of Agni has to be taken in to account as, it is the key concern because on chronic exposure to medical management and diseased state in the body, Aam gets as accumulated and create Agnimandya.

Limitations

The work mentioned here is limit to generalize as, it is mostly clinician dependent and may vary on the Subjective assessment of the patient, like nutritional status, vital parameters. Contraindications of the enteral nutrition like pulmonary aspiration, severe diarrhea, intestinal ischemia are the liable factors to limit internal validity. Other confounding factors like lack of awareness of methods of preparation of the Pathya Kalpana's to relatives. Efforts to teach and create awareness and ease for relatives and doctors to learn standard preparation methods would be helpful in minimizing the limitations.

CONCLUSION

Medical nutrition therapy of the critically ill patient remains a challenge. Numerous published trials however have allowed us to improve the evaluation of the needs of patients throughout their ICU stay, integrating with better understanding of the physiology. The absence of studies focused on the early or prolonged stay does not allow us to fine tune the prescription of nutrition in these conditions. ICU patients are a heterogeneous group and a unique recommendation for every patient and situation cannot be suggested. Each diagnosis, each period of time (early, post resuscitated, stabilized, long stay), and any concurrent complications must be taken into consideration. Nevertheless, these guidelines based on the best current knowledge and evidence provide a set of nutritional recommendations in the most frequent clinical situations encountered in daily practice in the ICU.

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