Clinical Research

Critical study of Jara (aging) and its management

Nisha Parmar, Mahesh Vyas¹, Hitesh Vyas²

Lecturer, Department of Basic Principles, Gulab Kunwarba Ayurved Mahavidyalaya, ¹Associate Professor, ²Assistant Professor, Department of Basic Principles, Institute for Post Graduate Teaching and Research in Ayurveda, Gujarat Ayurved University, Jamnagar, Gujarat, India

Abstract

Jara Avastha (stage of old age) is the later phase of life in which maximum decline of bodily elements is observed. Paramanuvibhaga (cell division) takes place at every moment; particularly in old age, it will be fast in comparison with other phases of life. Some organ related changes also take place during this period, which are the decades of Balya, Vridhhi, Chhavi, Medha, Twak, etc., In this study, applied aspects of Medha Hani, Twak Hani, and Drishti Hani were evaluated subjectively as well as objectively. Patients were selected from the OPD of Department of Basic Principles, I.P.G.T. and R.A., Gujarat Ayurved University, Jamnagar, irrespective of their sex, caste, religion, etc., and randomly divided into two groups. Patients in Group A were treated with Panchagavya Ghrita and Group B with plain Go Ghrita for 90 days and the dose of drug was 10 g/day at Niranakkola (early morning with empty stomach). Both groups showed significant results, the difference in between the groups is statistically insignificant.

Key words: Aging, Drishti Hani, Jara, Medha Hani, Panchagavya, Twak Hani

Introduction

Jara¹ is a term which indicates the declining phase, especially old age or aging process. In other words, it is a catabolic procedure. For example, if the word Jara is used in relation to Ahara Pachana, it denotes digestion of food; if a person eats Ushana, Snigdha Ahara, it gets digested easily.² If it is used for age, it means a process in which body elements get decreased continuously. Representing this phenomenon, Acharya Sharangdhar has narrated decade wise decline conditions.³ In the 1st decade, Balyavastha (infancy) will be diminished, in the 2nd decade Vridhhi (growth), in the third decade Medha (intellect), in the 4th decade Chhavi (complexion), in the 5th decade Twak (skin), in the 6th decade Drishti (vision), and so on. It indicates that continuous catabolic changes are taking place in the body and it happens because of degradation of body elements (Paramanu Vibhaga).⁴ Acharya Charaka has clearly mentioned that “vitiation of any substance has specific cause and it is responsible for the vitiation of body elements.”⁵ Vitiation is always based on vitiates; Rasa Vagbhata⁶ has quoted that Jara Avaththa appears because of Pantha (excessive walking or traveling), Sheetam (cold or frozen food), Kadanna (food articles which are devoid of Jeevaniya properties), and Manas Pratikulata (improper condition of mind). All these causes are responsible for Akalaja Jara or early aging. Some other causes found regarding Kalaja Jara are Kala (time factor),⁷ Swabhava (nature),⁸ and Karma Swabhava.⁹

The above-mentioned causative factors can be observed day-to-day life. On the other side, natural process of aging has also become fast due to the changes in environment, food cultivation with chemical fertilizers, pesticides, and because of food processed through modern technology. Consumption of this type of food and toxin accumulation in the body causes premature aging. Another most important cause is psychological stress. Hence, the aging changes appear earlier than they have to in individuals, who are prone to the stressors.¹⁰

Panchagavya contains five elements, those are derived from cow, viz. milk, curd, ghee, urine, and cow dung.¹¹ A number of useful formulations have been mentioned in Ayurvedic classics with Panchagavya as a component. Besides providing health and nutrition to the body, Panchayagya cures diseases too with its various properties. Among these properties, Santarpana – Apatarpanakaraka property is being considered as an important one.¹²

Ayurvedic principles of treatment as well as origin of diseases are based on Santarpata or Apatarpata only.¹³ In the context of treatment, it is clearly mentioned that Santarpata Roga should be treated by means of Apatarpata Chikitsa and vice versa. Many drugs or formulations are mentioned in the classics regarding the treatment of an individual Santarpata Roga or Apatarpata Roga. But very few formulations are

Address for correspondence: Dr. Nisha Parmar,
D/O. Mr. Vinodrai M. Parmar, ‘AumAmardeep,’
Barai Tenaments - 10, 5 - Banglow, Stress No. 1,
Indira Marg, Jamnagar - 361 008, Gujarat, India.
E-mail: nard_nisha@yahoo.com
Santarpanakara of properties together, i.e. milk, curd, and ghee are having Santarpanakara property and Gomaya (cow dung) and Gomootra (urine) having Apatarpankara property.

Considering these qualities, the present study is planned with an objective to evaluate the efficacy of Panchagavya Ghrita and Go Ghrita on Jara and on Dhatus.

Materials and Methods

Criteria for selection

Patients of the age group of 40-70 with specific signs and symptoms of Jara, either Medha Hani (deterioration of intellect), Twak Hani (deterioration of skin), and/or Drishti Hani (deterioration of vision) were selected from the OPD of Dept. of Basic principles, I.P.G.T. and R.A., irrespective to their sex, caste, religion, etc.

Exclusion criteria

1. Patients having any remarkable or major disease like hyperthyroidism, and other organic pathology, etc.
2. Patients having metabolic diseases like diabetes, hypertension, etc.
3. Persons in whom Ghrita is contraindicated.
4. Age <40 and >70 years.

Investigations

1. Routine hematological tests, i.e., Hb%, Total Count (TC), Differential Count (DC), Erythrocyte Sedimentation Rate (ESR), Packed Cell Volume (PCV), RBC count.
2. Urine and stool investigation.
3. Lipid profile – serum cholesterol, serum triglyceride, High Density Lipoprotein (HDL), Low Density Lipoprotein (LDL), Very Low Density Lipoprotein (VLDL).
4. Renal Function Test (RFT) – serum creatinine, blood urea, uric acid.
5. Liver Function Test (LFT) – serum bilirubin (total), serum bilirubin (direct), Serum Glutamic Pyruvic Transminase (SGPT), Serum Glutamic Oxaloacetic Transminase (SGOT), serum alkaline phosphatase.
6. Fat monitoring, Body Mass Index (BMI) were done.
7. ECG and other necessary investigations were used for exclusion criteria as required.

Drug selection and posology

Panchagavya Ghrita was prepared in the Dept. of Rasa Shastra and Bhaishajya Kalpana by following the classical method of Ghrita preparation. This drug was administered to the patients of Group A. Patients of Group B received plain Go Ghrita. Dose of drug was 10 g/day early in the morning on empty stomach along with lukewarm water. Total duration of therapy was 90 days.

Chitrakadi Vati was given for Deepana-Pachana in a dose of 2 tab. twice a day for 7 days to all the patients.

Criteria for assessment

Medha Hani

Assessed with the help of Post Graduate Institute (PGI) memory scale and special scoring pattern, Hamilton Anxiety Rating scale, and Hamilton Depression Rating Scale.

Twak Hani

Special scoring pattern was developed to estimate the symptoms of Twak Hani.

Drishti Hani

It was assessed by retinoscopy, visual acuity, auto-refractometry, fundoscopy, and color vision. The examination was done in the OPD of Shalakya Department.

Associated complaints of Jara like Utshah Hani, Valita, Kasa, and Shwasa were assessed with the help of specially prepared scoring pattern.

Assessment of overall effect of the therapy and statistical analysis

At the end, the data were statistically analyzed through paired and unpaired ‘t’ test. Total effect of treatment was assessed in terms of cured, marked improvement, moderate improvement, mild improvement, and no changes.

Observations and Results

Total 25 patients (13 in Group A and 12 in Group B) were registered in the trail and 17 completed (7 in Group A and 10 in Group B) the treatment. Age wise distribution shows that 64% of patients were between 40-50 years, 28% were 51-60, and 8% were in 61-70 years of age group. Maximum patients (80%) were following Samashana while 20% Vishamasana. Majority of the patients were having Nirama and satisfactory Mala Pravritti (64%), whereas Sama and unsatisfactory Mala Pravritti were found in 36% of patients. Minimum number of patients were taking Go Ghrita (16%) and consumption of cotton seed oil was reported by 76% of patients. Maximum number of patients were having Madhyaama Abhyavaharana Shakti (80%) and Madhyaama Jarana Shakti (68%).

Effect of therapy on chief complaints

In Group A, highly significant results were obtained in Grahana Shakti Hani (P ≤ 0.001) and Twak Hani (P ≤ 0.001), while significant result was found in Smarana Shakti Hani (P = 0.004).

In Group B, highly significant result was obtained in Grahana Shakti Hani, Dharana Shakti Hani, and Smarana Shakti Hani (P ≤ 0.001) [Tables 1 and 2]. On comparison, all the symptoms showed good results in Group B. Maximum relief was found in Twak Hani (100%) in both groups.

Effect of therapy on associated complaints

In Group B, highly significant result was obtained in Kasa (P ≤ 0.001), while significant results were obtained in Utshah Hani (P = 0.004) and Valita (P = 0.006). Percentage wise relief was found maximum in Kasa (100%) in both groups, while it was same in Shwas in Group B [Tables 3 and 4].

Effect on biochemical parameters

In Group A, S. high density lipoprotein (HDL) (P = 0.010) was increased significantly, whereas S. creatinine (P = 0.038) and uric acid (P = 0.041) were decreased significantly. In lipid profile, S. triglyceride (P = 0.186) was found to be decreased though it was insignificant. The increase of LDL and decrease of VLDL were insignificant in this group. While no significant...
increase was found in LDL, VLDL value decreased, but was not significant. No significant increase or decrease in Group B [Tables 5 and 6].

**Comparison of effect of therapy on chief complaints**

Comparing both groups, in Group B all the symptoms showed good results in group B. On comparison in between both the groups, none of the symptoms have significant difference. Maximum relief was found in **Twak Hani** (100%) in both groups [Table 7].

**Overall effect of therapy**

Complete remission was found in 14.28% of patients in Group A; marked improvement was observed in 28.57% of patients in Group A and 50% of patients in Group B; moderate improvement was found in 28.58% of patients in Group A and 50% of patients in Group B; mild improvement as well as no change was found in 14.28% of patients in Group A [Table 8].

**Discussion**

**Jara** is one of the inevitable stages of human life and can be experienced by everybody. Many research projects are going on to find out the remedy for early aging. Ayurveda is a science which is having vast collection of observational and experimental data on **Jara**.

In this study, to analyze the **Jara Avastha** and the effect of drug on it, **Medha Hani**, **Twak Hani**, and **Drishti Hani** were taken as

### Table 1: Effect on chief complaints in seven patients of Group A

| Chief complaints          | Mean score | N | % Relief | SD  | SE  | t    | P   |
|---------------------------|------------|---|----------|-----|-----|------|-----|
| **Grahana Hani**          | 1.833      | 6 | 63.66↑   | 0.408| 0.167| 7.000| <0.001|
| **Dharana Hani**          | 2.286      | 7 | 50.06↑   | 0.900| 0.340| 3.361| 0.015|
| **Smarana Hani**          | 1.857      | 7 | 53.85↑   | 0.577| 0.218| 4.583| 0.004|
| **Vachana Hani**          | 1.333      | 6 | 37.51↑   | 0.548| 0.224| 2.236| 0.076|
| **Vigyana Hani**          | 1.667      | 6 | 49.97↑   | 0.753| 0.307| 2.712| 0.042|
| **Twak Hani**             | 1.000      | 4 | 100      | 0.000| 0.000| +inf | <0.001|
| **Drishti Hani**          | 1.571      | 7 | 18.20↑   | 0.488| 0.184| 1.549| 0.172|

↑: Increase

### Table 2: Effect on chief complaints in 10 patients of Group B

| Chief complaints          | Mean score | n  | % Relief | SD  | SE  | t    | P   |
|---------------------------|------------|----|----------|-----|-----|------|-----|
| **Grahana Hani**          | 1.300      | 10 | 92.31↑   | 0.422| 0.133| 9.000| ≤0.001|
| **Dharana Hani**          | 1.300      | 10 | 92.31↑   | 0.422| 0.133| 9.000| ≤0.001|
| **Smarana Hani**          | 1.500      | 10 | 80.00↑   | 0.632| 0.200| 6.000| ≤0.001|
| **Vachana Hani**          | 1.000      | 6  | 83.30↑   | 0.408| 0.167| 5.000| 0.004|
| **Vigyana Hani**          | 1.600      | 5  | 62.50↑   | 0.707| 0.316| 3.162| 0.034|
| **Twak Hani**             | 1.333      | 6  | 100.0↑   | 0.516| 0.211| 6.325| 0.001|
| **Drishti Hani**          | 1.000      | 10 | 00.00    | 0.000| 0.000| 0.000| 1.000|

↑: Increase

### Table 3: Effect on associated complaints in seven patients of Group A

| Associated complaints     | Mean score | n  | % Relief | SD  | SE  | t    | P   |
|---------------------------|------------|----|----------|-----|-----|------|-----|
| **Utsaha Hani**           | 2.000      | 4  | 62.50↑   | 0.957| 0.479| 2.611| 0.080|
| **Valita**                | 1.200      | 5  | 66.67↓   | 0.447| 0.200| 4.000| 0.016|
| **Kasa**                  | 1.000      | 1  | 100↓     | -   | -   | -    | -   |

↑: Increase, ↓: Decrease

### Table 4: Effect on associated complaints in 10 patients of Group B

| Associated complaints     | Mean score | n  | % Relief | SD  | SE  | t    | P   |
|---------------------------|------------|----|----------|-----|-----|------|-----|
| **Utsaha Hani**           | 1.833      | 6  | 90.94↑   | 0.816| 0.333| 5.000| 0.004|
| **Valita**                | 1.375      | 8  | 63.63↓   | 0.641| 0.227| 3.862| 0.006|
| **Shvasa**                | 1.000      | 2  | 100↓     | 0.000| 0.000| +inf | ≤0.001|

↑: Increase, ↓: Decrease
parameters and Panchagavya Ghrita and plain Go Ghrita were used in the treatment.

Many formulations have been explained in Samhitas to slower down the aging process as well as to lead a comfortable life in the old age. Ghrita is the best one among all the Snehadravya, and maximum number of Ghrita preparations are explained in Rasayana Chikitsa. Panchagavya Ghrita is one of the formulations having both Apatarpananakaraka and Santatapananakaraka Dravyas together, so that both kinds of properties can be obtained through it, which is essential in the management of jara.

Rasayana Chikitsa will be effective either in Purva Vayah or in Madhuya Vayah. General observations shows that maximum number of patients are between 40 and 50 years of age. As it is a working group, treatment is essential for them.

On Medha, the effect of Panchagavya Ghrita shows highly significant relief, in Grahana Shakti Hani in Group A, while improvement in Grahana Shakti Hani, Dharana Shakti Hani, and Smaranak Shakti Hani was also highly significant in Group B (P ≤ 0.001). It is clearly indicated in the literature of Ayurveda that Go Ghrita has the property to increase Dhi, Dhriti, and Smriti.

Analytical study shows that Panchagavya Ghrita has more Vitamin A than plain Go Ghrita. It is indicated that Chakshushya effect is obtained with Panchagavya Ghrita. Observations are also in favor of this analysis that 18.20% [Table 1] patients got relief in Drishti Hani on subjective parameters.

Table 5: Effect on liver function tests and renal function tests in Group A (n=7)

| Parameter             | BT     | AT     | Diff. | % Relief | SD    | SE    | t     | P     |
|-----------------------|--------|--------|-------|----------|-------|-------|-------|-------|
| S. creatinine         | 0.957  | 0.857  | 0.100 | 10.45↓   | 0.100 | 0.0378| 2.646 | 0.038 |
| Blood urea            | 23.000 | 21.571 | 1.429 | 6.21↓    | 5.653 | 2.136 | 0.669 | 0.529 |
| Uric acid             | 4.800  | 4.400  | 0.400 | 8.33↓    | 0.358 | 0.146 | 2.739 | 0.041 |
| S. albumin            | 3.900  | 3.943  | −0.0429 | 1.10↑   | 0.257 | 0.0972| −0.441| 0.675 |
| S. globulin           | 3.233  | 3.214  | 0.0167 | 0.52↓    | 0.133 | 0.0543| 0.307 | 0.771 |
| Alkaline phosphatase  | 49.667 | 55.833 | −6.167 | 12.42↓   | 17.532| 7.157 | −0.862| 0.428 |
| SGPT                  | 14.833 | 17.333 | −2.500 | 16.85↑   | 4.037 | 1.648 | −1.517| 0.190 |
| SGOT                  | 23.333 | 20.500 | 2.833 | 12.14↓   | 4.309 | 1.759 | 1.161 | 0.168 |
| HDL                   | 39.286 | 50.143 | −10.857 | 27.64↑   | 7.798 | 2.947 | −3.684| 0.010 |
| LDL                   | 117.767| 120.867| −3.100 | 2.63↑    | 18.012| 7.353 | −0.422| 0.691 |
| VLDL                  | 26.233 | 25.486 | 3.733 | 13.09↑   | 8.058 | 3.290 | 1.044 | 0.344 |
| S. cholesterol        | 190.571| 205.857| −15.286 | 8.02↑    | 18.382| 6.948 | −2.200| 0.070 |
| S. triglyceride       | 149.429| 127.429| 22.000 | 14.72↓   | 38.940| 14.718| 1.495 | 0.186 |
| Bilirubin (T)         | 0.917  | 0.900  | 0.017  | 1.82↓    | 0.426 | 0.174 | 0.0958| 0.927 |
| Bilirubin (D)         | 0.367  | 0.417  | −0.0500 | 13.62↑   | 0.339 | 0.138 | −0.361| 0.733 |

SGPT: Serum Glutamic Pyruvic Transminase, SGOT: Serum Glutamic Oxaloacetic Transminase, HDL: High Density Lipoprotein, LDL: Low Density Lipoprotein, VLDL: Very Low Density Lipoprotein, ↑: Increase, ↓: Decrease

Table 6: Effect on liver function tests and renal function tests in Group B (n=10)

| Parameter             | BT     | AT     | Diff. | % Relief | SD    | SE    | t     | P     |
|-----------------------|--------|--------|-------|----------|-------|-------|-------|-------|
| S. creatinine         | 1.200  | 1.190  | 0.01000 | 0.83333 | 0.173 | 0.0547| 0.183 | 0.859 |
| Blood urea            | 32.300 | 29.700 | 2.600 | 8.049536| 9.743 | 3.081 | 0.844 | 0.421 |
| Uric acid             | 4.640  | 4.820  | −0.180 | 3.87931↑ | 0.828 | 0.262 | −0.687| 0.509 |
| S. albumin            | 3.800  | 3.910  | −0.110 | 2.89474↑ | 0.273 | 0.0862| −1.276| 0.234 |
| S. globulin           | 3.240  | 3.300  | −0.0600 | 1.85185↑ | 0.369 | 0.117 | −0.514| 0.619 |
| Alkaline phosphatase  | 66.100 | 71.100 | −5.000 | 7.5643↑  | 25.342| 8.014 | −0.624| 0.548 |
| SGPT                  | 13.400 | 12.000 | 1.400 | 10.44776 | 6.077 | 1.922 | 0.728 | 0.485 |
| SGOT                  | 21.400 | 24.000 | −2.600 | 12.1495↑ | 7.090 | 2.242 | −1.160| 0.276 |
| HDL                   | 51.900 | 55.500 | −3.600 | 6.93642↑ | 15.579| 4.927 | −0.731| 0.484 |
| LDL                   | 91.733 | 104.067| −12.333 | 13.4445↑ | 13.155| 7.595 | −1.624| 0.246 |
| VLDL                  | 14.267 | 17.933 | −3.667 | 25.7027↑ | 7.047 | 4.068 | −0.901| 0.463 |
| S. cholesterol        | 181.600| 184.100| −2.500 | 1.37665↑ | 28.368| 8.971 | −0.279| 0.787 |
| S. triglyceride       | 81.200 | 111.500| −30.300 | 37.3153↑ | 78.334| 24.771| −1.223| 0.252 |
| Bilirubin (T)         | 0.930  | 0.910  | 0.0200 | 2.150538 | 0.262 | 0.0827| 0.242 | 0.814 |
| Bilirubin (D)         | 0.330  | 0.360  | −0.0300 | 9.09091↑ | 0.149 | 0.0473| −0.635| 0.541 |

SGPT: Serum Glutamic Pyruvic Transminase, SGOT: Serum Glutamic Oxaloacetic Transminase, HDL: High Density Lipoprotein, LDL: Low Density Lipoprotein, VLDL: Very Low Density Lipoprotein, ↑: Increase
Table 7: Comparison of effect of therapy on chief complaints

| Chief complaints | df | % Relief Group A | % Relief Group B | t  | P   |
|------------------|----|------------------|------------------|----|-----|
| Grahana Hani     | 14 | 63.66            | 92.31            | -0.155 | 0.879 |
| Dharana Hani     | 15 | 50.06            | 92.31            | 0.177   | 0.862 |
| Smarana Hani     | 16 | 53.85            | 80.00            | -0.249   | 0.807 |
| Vachana Hani     | 10 | 37.51            | 83.30            | -1.195   | 0.260 |
| Vighyana Hani    | 10 | 49.97            | 62.50            | 0.000   | 1.000 |
| Twak Hani        | 8  | 100              | 100              | -1.265   | 0.242 |
| Drishti Hani     | 15 | 18.20            | 0                | 1.879   | 0.080 |

Biochemical parameters show that HDL was increased significantly, while blood urea and serum creatinine were decreased in Group A. It indicates that though Gomootra is a content of Panchagavya Ghrita, it shows significant decrease in blood urea.

Both the groups A and B showed highly significant and significant results, respectively, regarding chief complaints.

**Conclusion**

It is said that Jara is an irreversible condition that can only be stabilized or prevented and not to be cured. In the management of Jara, Rasayana Chikitsa is indicated and different types of Ghrita are widely used. So, it is clear that Ghrita is the drug of choice for Jara as Snehaansa, that is decreased during this stage. Jara appears because of many causes, either Santaranakaraka or Aparatpanakaraka. Panchagavya Ghrita is having both the properties. Also, it is indicated in Shareerika and Manasika Vyadhi. Hence, its effects were found on both physical and psychological factors. Both the groups provided better results on the chief complaints Medha Hani, Twak Hani, and Drishti Hani. But, comparison in between both the groups is insignificant.

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हिन्दी सारांश

जरा अवस्था का समालोचनात्मक अध्ययन एवं पंचगत्व द्वारा उसका उपाय

निशा दी. परमार, हिरंश व्यास, महेश व्यास

इस शोध कार्य में जरा पर पंचगत्व के प्रभाव को जानने हेतु तीन परिमाण मेघा हानि, त्वक हानि और दृष्टि हानि सुनने गये। शोध कार्यार्थ जराकृति 25 रूपांतर को जरा के उपरोक्त तीन लक्षणों को ध्यान में रखते हुए याद्विषाित विभाजन पद्धति द्वारा दो वर्गों में विभाजित किया गया। पहले वर्ग में कुल 13 और दूसरे वर्ग में 10 रूपांतर का पंजीकरण हुआ, जिसमें से अनुक्रम से 7 और 10 रूपांतर ने अंत तक चिकित्सा ली और अन्य 08 रूपांतर ने कोई कारण दर्शाये बिना बीच में ही चिकित्सा छोड़ दी। इन रूपांतरों में मेघा हानि, त्वक हानि और दृष्टि हानि की स्थिति का मूल्यांकन शास्त्रीय लक्षणों एवं प्रात्याहितक रूपों के आधार पर किया गया। प्रथम वर्ग के रूपांतर को पंचगत्व घट प्रतिदिन 10 ग्राम प्रातः निराकार में कोषण जल के साथ दिया गया एवं द्वितीय वर्ग के रूपांतर को केवल गोभू उसी मात्रा में दिया गया। चिकित्सा के अंत में सांख्यिकीय दृष्टि से औषध के प्रभाव से मेघा हानि, त्वक हानि और दृष्टि हानि में हुए परिवर्तन को जाना गया और यह पाया गया कि प्रथम वर्ग और दूसरे वर्ग के रूपांतर को महत्तम लाभ प्राप्त हुआ।