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A Comparative Clinical Study to Evaluate the Combined Efficacy of Musta Aragwadhadi Choorna Udwartana Followed by Vamana and Musta Aragwadhadi Choorna Udwartana Followed by Virechana in the Management of Medoroga W.S.R to Dyslipidemia

Dr. Nisarga[1], Dr. Doddabasayya[2], Dr. Shilpa Sree. K[3]

[1]Post Graduate Scholar, Department of PG Studies in Panchakarma,
[2]Professor, Department of PG Studies in Panchakarma,
[3]Assistant Professor, Department of PG Studies in Panchakarma,
[1,2,3]Taranath Government Ayurveda Medical College and Hospital, Ballari, Karnataka, India

ABSTRACT

Dyslipidemia are generally characterized clinically by increased plasma levels of cholesterol, triglycerides or both, variably accompanied by reduced level of HDL cholesterol. In Ayurveda, Dyslipidemia can be correlated to Medoroga, based on same etiological factors and pathogenesis. Involvement of Kapha is invariable associated with kupita Vata and dusta Medas. Here in this study, 40 patients diagnosed as Medoroga were subjected to Udwartana with Musta aragwadadhi choorna, Deepana pachana with Musta choorna, Vamana with Madanaphala pippali yoga and virechana with Haritakyadi lehya. Statistically significant results were seen in both subjective and objective parameters.

KEYWORDS: *Medoroga, Dyslipidemia, Udwartana, Vamana, Virechana*

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INTRODUCTION

Disorders of lipoprotein metabolism are collectively referred to as Dyslipidemia. Dyslipidemia are generally characterized clinically by increased plasma levels of cholesterol, triglycerides or both, variably accompanied by reduced level of HDL cholesterol[1]. Lipids such as Cholesterol or triglycerides are absorbed from the intestines and carried throughout the body via lipoproteins for energy, steroid production or bile acid formation. Major contributed to these pathways are LDL Cholesterol and triglycerides. An imbalance of any of these factors, either from organic or nonorganic causes can lead to Dyslipidemia.

In India approximately 25 - 30% of urban and 15 - 20% rural subjects are suffering from Dyslipidemia. Although it is more common among males, but it affects both the genders. 30 - 40 years age group has high prevalence[2] According to National Cholesterol Education Programme (NCEP) in Indians is very high with 79% of the subjects having atleast one lipid abnormality, with decreased HDL-C in 72.3%, hypertryglyceridemia in 29.5%, and elevated LDL-C in 11.8% of subjects[3]

In Ayurveda, Dyslipidemia can be correlated to Medoroga, based on same etiological factors and

pathogenesis[4]. Due to nidana sevana like shleshmala ahara and vihara, kaphavriddi takes place and due to ashraya ashrayee bhava[5] kapha vitiates medo dhatu. This in turn leads to marga avarana by medo vriddi and nourishment for further dhatu will be depleted which leads to Medoroga and it produces symptoms like sarvakarmeshu ashakta, kshudra shwasa, atipipasa etc.

As Medoroga is one of the Santarpana janya vyadhi, Apatarpna chikitsa[6] like Vamana and Virechana are the prime treatment modality. The line of treatment for the evacuation of mala rupi kapha is vamana and it is the best treatment for vitiated kapha. Virechana karma being the best treatment for pitta or pitta association with kapha dosha through which large amount of bile is excreted, which indirectly helps in the excretion of cholesterol.

As in Medoroga, there will be excessive vitiation of mala rupi kapha and poshaka meda, before planning for Snehapana, Rookshana is advised. So this condition, rookshana in the form of Udwartana was choosen as it does kaphahara and medasaha pravilayana[7]

AIMS AND OBJECTIVES

A Comparative clinical study to evaluate the combined efficacy of musta aragwadadhi choorna Udwartana followed by vamana and musta aragwadadhi choorna Udwartana followed by virechana in the management of Medoroga w.s.r to Dyslipidemia.

METHODOLOGY -

Minimum of 40 patients with clinical features of Medoroga (Dyslipidemia) coming under inclusion criteria will be selected irrespective of gender, religion, socio-economic status from OPD of Taranath Government Ayurvedic Medical College and Hospital, Ballari

TREATMENT PROTOCOL:
Group A - VAMANA
Group B - VIRECHANA

Purva karma - Udwartana with musta aragwadadhi choorna, Deepana pachana with Musta Choorna (1-3gms thrice a day with Ushnajala, before food) for 3-7 days/till niraamia lakshanas are attained. Snehapana in Arohana krama with Vacha haridradigana siddha taila was given till samyak snigdha lakshanas were attained followed by 1 day in group A and 3 days in group B sarvanga abhyanga and bushpa sweda.

Pradhana karma - On the day of Vamana and Virechana, sarvanga abhyanga with murchita tila taila followed by bashpa sweda. Vamana with Madanaphala pippali choorna (antarnakhamushti pramana), Virechana with Haritakyadi lehya 1-2 pala (48-96 gm) with ushnodaka as anupana is given.

Paschat karma - Samarjana kama is adviced as per the shuddhi.

DIAGNOSTIC CRITERIA -

Individuals will be selected as per the the classical Lakshanam of Medoroga and also based on Lipid levels of contemporary science.

Lakshanas of medoroga –

- Sarvakarmashu ashaktaha
- Kshudra shwasa
- Atipipasa
- Ati kshudha
- Swedadhikyata
- Dourgandhya
- Alpa maithuna

Inclusion criteria:-

- The Subjects age between 30-60 years irrespective of their caste, race and gender.
- Subjects who full filling the diagnostic criteria.
- Diagnosed cases of Dyslipidemia subjects will be taken.
- Subjects fit for Udwartana, Vamana and virechana.

Exclusion criteria:-

- Subjects present with HIV, HbsAg or any infective disorders.
- Subjects suffering with uncontrolled diabetes mellitus- HbA1C > 7.5 and hypertension > 160/100mg.
- Patients undergone cardiac surgeries like coronary artery bypass graft (CABG), angioplasty etc.
- Pregnant and Lactating women will be excluded.
- Subjects with other systemic disorders which interfere the course of treatment will be excluded.

Assessment Criteria:
Subjective criteria:

- Sarvakarmashu ashaktaha
- Kshudra shwasa
- Atipipasa
- Ati kshudha
- Swedadhikyata
- Dourgandhya
- Alpa maithuna

Objective criteria:
Lipid profile -

Total serum cholesterol >200mg/dl

LDL >130mg/dl

Triglycerides >150mg/dl

HDL <60mg/dl.

OBSERVATIONS :

Distribution of subjects according to Age group:

In Group A, 10(50%) patients belonged to the age group 41-50yrs, 10(50%) patients belonging to age group 31-40 yrs

In Group B, maximum number 9(45%) of the patients belonged to the age group 41-50yrs, followed by 6(30%) patients belonged to age group 31-40 yrs and 5(25%) patients belonged to age group 51-60 yrs.

Distribution on the basis of gender:

In Group A, maximum number 16(80%) of the patients were female, 4(20%) patients were male.

In Group B, maximum number12(60%) of the patients were male, 8(40%) patients were female.

Table no 1: Distribution of subjects according to Symptoms:

Lakshanas	Number of Patients Group A	Percentage	Number of Patients Group B	Percentage
SARVAKARMESHU ASAKTA	14	70%	14	70%
KSHUDRA SHWASA	9	45%	13	65%
ATIKSHUDHA	8	40%	7	35%
ATIPIPASA	4	20%	10	50%
SWEDADHIKYATA	9	45%	9	45%
DOURGANDHYA	1	5%	1	5%
MAITHUNASHAKTI	1	5%	0	0%

ASSESSMENT OF TOTAL INTERVENTION - Effect of therapy on SUBJECTIVE PARAMETERS –

1. Effect of treatment on Sarvakarmeshu asakta - IN GROUP A - 14(70 %) was noted with Sarvakarmeshu asakta, effect of treatment on sarvakarmeshu asakta was found Highly significant from DT-AT (p value =0.0003), Highly significant from AT- AF (p value =0.0004) IN GROUP B - 14(70 %) was noted with Sarvakarmeshu asakta, effect of treatment on sarvakarmeshu asakta was found Highly Significant from BT-DT (p value =0.0003), Highly significant from DT-AT, (p value <0.0001), AT- AF Highly significant from AT- AF (p value =0.0002)

INTERPRETATION - GROUP A AND B showed highly Significant results, but GROUP B showed mild Significant results from BT-DT compared to GROUP A due to following proper pathya of the disease.

INBETWEEN THE GROUPS - There is no difference in p value DT, AT & AF (=0.3555, =0.1843 & =0.1234) indicating Not Significant between the groups.

BT - DT - Due to the effect of udwartana, the increased dhatwagni does kapha meda vilayana and proper formation of Poshaka and poshya dhatus takesplace. Due to the effect of Musta choorna, most of the drugs of Musta aragwadadhi choorna used for Udwartana like Musta, twak due to thier deepana pachana effect increases the Jataragni and dhatwagni, due to which the ama and medo dhatu present in the srotas gets digested and Haritaki, vibhitaki due to its lekhana, bhedana action, improperly formed Abaddha Medodhatu gets corrected and proper formation of Dhatus takesplace by which sthirikarana of Anga takesplace and Rasayana effect of amalaki, from all above said drugs and its properties, patient gets relief from sarvakarmeshu asakta.

DT - AT - vamana and virechana due to its srotoshodhana effect does kapha medahara, due to its urjagni action does proper formation of dhatu. Madanaphala, vacha, shunti due to its, pachana, lekhana action does kapha meda nirharana and corrects medodhatwagni mandya dueto its deepana action helpful in formation of proper saara and kitta bhaga of the dhatus.

AT - AF - Due to the increase of jataragni and dhatwagnimandya after shodhana, formation of dhatus will be proper.therefore patient got relief from Sarvakarmeshu asakta.

2. Effect of treatment on Kshudrashwasa –

IN GROUP A – 9 (45 %) was noted with Kshudrashwasa, effect of treatment on Kshudrashwasa was found Highly Significant from BT-DT (p value =0.0047), Highly significant from DT-AT (p value=0.0021), Highly significant from AT- AF (p value =0.0035) IN GROUP B – 13(65 %) was noted with Kshudrashwasa, effect of treatment on Kshudrashwasa was found Highly significant from DT-AT (p value<0.0001), Highly significant from AT- AF (p value <0.0001)

INTERPRETATION - GROUP A AND B showed highly Significant results, but GROUP A showed Significant results from BT-DT compared to Group B.

INBETWEEN THE GROUPS - There is no difference in p value, AT & AF (=0.3888, =0.1594) indicating Not Significant between the groups.

BT - DT - Due to the effect of udwartana, siramukhaviviktatwa and twachagni tejana, dilatation of sira takesplace by which kapha and meda present in the srotas gets liquified and due to the effect of Musta choorna of deepana pachana does pachana of ama, deepana of Agni and lekhana of Medo dhatu located in pranavahasrotas takesplace. Udwartana with Musta aragwadadhi choorna drugs especially patha, haritaki, vibhitaki, devadaru, gokshura, twak having the main action of shwasahara due to its katu rasa does srotasam vivrunoti and vacha and nagara due to its ushna, teekshna, sookshma properties, liquifies the Doshas and removes the obstruction in srotas this reduces the kshudrashwasa. DT - AT Snehapana with vacha haridradigana siddha taila, the drugs like haritaki, devadaru, nagara, prishnaparni, Madhuka having the karma of Shwasahara due to its ushna, teekshna sookshma properties reaches the pranavahasrotas and softens the abaddha Dosha and liquifies the abaddha Dosha due to which vatanulomana takesplace and thus kshudrashwasa reduced.

Sarvanga Abhyanga and swedana liquifies the Dosha present in the srotas andbring them to Koshta and relieves kshudrashwasa.

Vamana due to its action of hrit, parshwa, margashuddhi and Madana pippali due to its kaphavatahara and shwasahara property, yashtimadhu having shwasahara action, Vacha having lekhana action and saindhava having kapha chedana action . All of them in combination reduces Kshudrashwasa

3. Effect of treatment on Atipipasa -

IN GROUP A – 4(20 %) was noted with Atipipasa, effect of treatment on Atipipasa was found Statistically Significant from BT-DT (p value =0.0421), Statistically significant from DT-AT (p value=0.0421).

IN GROUP B – 10(50 %) was noted with Atipipasa, effect of treatment on Atipipasa was found Statistically significant from DT-AT (p value=0.0308)

INTERPRETATION - GROUP A AND B showed Statistically Significant results, but

GROUP A showed Statistically Significant results from BT-DT compared to GROUP B.

INBETWEEN THE GROUPS - There is no difference in p value DT, AT & AF (=0.1701, =0.5821, & =0.4263) indicating Nothing Significant between the groups.

BT - DT Musta choorna and Musta aragwadadhi choorna especially haritaki, musta, gokshura having properties of deepana, pachana and lekhana and khadira, amalaki having medohara action and due to the effect of udwartana, kaphameda vilayana, the meda which does avarana to koshta is removed, so the proper movement of vata takesplaces does trishnahara. Musta, haritaki does nirharana of trishna due to its trishnahara properties.

DT - AT During Snehapana with vacha haridradigana siddha taila, the drugs like vacha, ativisha, nagara does deepana, pachana of Medo dhatu, haritaki does Vatanulomana and prishnaparni, madhuka due to its Madhura rasa, sheeta veerya does trishna Hara. After Vamana, due to its action of margashuddhi, meda obstructs the koshta by which increased samana vata gets releived therefore it reduces atipipasa. After virechana, due to its action of srotoshuddhi and vatanulomana, meda obstructs the koshta gets relieved and vatanulomana takesplace results in reduces Atipipasa.AT - AF Due to the effect of srotovishodhana and vatanulomana after vamana and virechana, patient got relief from atipipasa

4. Effect of treatment on Atikshudha –

IN GROUP A – 8(40 %) was noted with Atikshudha, effect of treatment on Atikshudha Highly significant from DT-AT (p value=0.0035), Highly significant from AT- AF (p value =0.0035)

IN GROUP B – 7(35 %) was noted with Atikshudha, effect of treatment on Atikshudha was found Statistically Significant from BT-DT (p value =0.0047), significant from DT-AT (p value=0.0020), significant from AT- AF (p value =0.0020)

INTERPRETATION - GROUP A and GROUP B showed Significant results, but GROUP A Showed mild Significant results from DT -AT & from AT- AF compared to GROUP B. INBETWEEN THE GROUPS - There is no difference in p value DT, AT & AF (=1.0000, =0.7520, =0.7520) indicating Not Significant between the groups.

BT -DT Due to the effect of udwartana, kaphameda vilayana, the meda which does avarana to koshta is removed, so the proper movement of vata takes places does atikshudha nashana. Musta aragwadadhi choorna especially haritaki, musta, gokshura having properties of deepana, pachana and lekhana and khadira, amalaki having medohara action. Due to which, the meda which does avarana to srotas is removed, so the proper movement of vata takesplace. So the patient will be free from Atikshudha . DT - AT During Snehapana with vacha haridradigana siddha taila, the drugs like vacha, ativisha, nagara does deepana, pachana of Medo dhatu, haritaki does Vatanulomana.

Acharya sushruta advised vamana for teekshnagi, bahudosha avastha, asAtikshudha caused due to

teekshnagni and as it is a amashaya samudbhava vyadhi, it is highly significant in reducing atikshudha. After Vamana and virechana, due to its action of margashuddhi and vatanulomana, meda obstructs the koshta by which increased samana vata gets releived and vatanulomana takesplace, therefore it reduces atikshudha.

AT - AF Due to the effect of srotovishodhana and vatanulomana, correction of agni after vamana and virechana, patient got relief from atikshudha.

5. Effect of treatment on Swedadhikyata -

IN GROUP A – 9(45 %) was noted with Swedadhikyata, effect of treatment on Swedadhikyata was found Statistically Significant from BT-DT (p value =0.0421), significant from DT-AT (p value=0.0153), significant from AT- AF (p value =0.0165)

IN GROUP B – 9(45 %) was noted with Swedadhikyata, effect of treatment on Swedadhikyata was found Statistically Significant from BT-DT (p value =0.0002), significant from DT-AT (p value=0.0021), significant from AT- AF (p value =0.0068)

INTERPRETATION - GROUP A & GROUP B showed Statistically Significant results.

INBETWEEN THE GROUPS - There is no difference in p value DT, AT & AF (=0.5664, =0.3283 & =0.7590) indicating Not Significant between the groups. BT - DT - Due to the ruksha guna of udwartana, shoshana of snigdha, pichhila guna of medodhatu takesplace by which formation of sweda reduces. Udwartana with Musta aragwadadhi choorna like vibhitaki, amalaki, haridra and musta due to its ruksha guna does shoshana of poshaka medo dhatu. By reduction of dushita meda, formation of its mala (sweda) also reduces.

DT - AT Snehapana with vacha haridradigana siddha taila, most of the drugs in this taila like haridra, daruharidra, devadaru due to its ruksha and laghu guna does snigdha, kelda shoshana of medo dhatu, which results in swedadhikyata reduces.

Vamana which removes vitiated kapha Dosha from the Koshta, by the reduction of vitiated kapha and meda in the body, therefore the proper formation of dhatu and mala takesplace, so patient got relief from swedadhikya. Virechana which removes dooshita pitta associated with kapha, by which metabolism (dhatwagni) of the medo dhatu is corrected and proper formation of saara and kitta bhaga takes place.

AT - AF -Due to the effect of medohara after vamana and virechana, swedadhikyata reduces.

OBJECTIVE PARAMETERS -

1. Effect of treatment on Total Serum Cholesterol-

IN GROUP A – 8(40 %) was noted with Total Serum Cholesterol, effect of treatment on Total Serum Cholesterol was found Statistically Significant from BT-DT (p value =0.0003), Highly significant from DT-AT (p value=0.0002), Highly significant from AT- AF (p value <0.0001)

IN GROUP B – 10(50 %) was noted with Total Serum Cholesterol, effect of treatment on Total Serum Cholesterol was found Statistically Significant from BT-DT (p value =0.0011), Highly significant from DT-AT (p value=0.0002), Highly significant from AT- AF (p value <0.0001)

INTERPRETATION - GROUP A AND B showed Highly Significant results from DT - AT & AT - AF and showed Statistically Significant results from BT-DT

INBETWEEN THE GROUPS - There is no difference in p value DT, AT & AF (=0.7835, =0.7474 & =0.8081) indicating Not Significant between the groups.

BT - DT - Due to the effect of Udwartana(rubbing + raised body temperature) diatatation of veins takesplace, by which cholesterol present in the blood are carried from all over the body to liver for catabolism and excreted through bile, thus there is a reduction in TSC after Udwartana. The drugs like haritaki, vibhitaki and amalaki containing chebulagic acid, tannins in Devadaru and phenolic compounds, adrenergic amine in gokshura, cinnamaldehyde, cinnamic acid in twak reduces cholesterol by inhibition of adipogenesis and activation of lipolysis. DT - AT - During Snehapana, the administered sneha contains vacha containing chemical constituents B-asarone inhibit pancreatic lipase activity (increases conversionof cholesterol into bile acids), flavonoids in prishnaparni and madhuka, triphala inhibit the cholesterol absorption from the intestine thus reduces cholesterol.kutaja bheeja is a potent purgative drug increases the diarrhoea due to increases peristalisis. The cholesterol collected from peripheral tissues during Udwartana, Snehapana, Abhyanga and swedana are efficiently expelled out equally both by Vamana and Virechana.

Madanaphala containing Saponin, valeric acid reduces cholesterol. Haritaki containing Saponin, tannins, beta - sitosterol reduces cholesterol.

Saindhava lavana (sodium chloride) decreases self diffusion of lipid within the lipid bilayer and can cause sodium ions to bind tightly to the lipids and

excreted out of the body. Guda acts as purifying agent for intestine, stomach

AT - AF - After shodhana, due to removal of doshas from its root, increase of Agni, metabolism of lipid is corrected and causative factors are completely avoided by the patients, So significant result were found after follow up.

2. Effect of treatment on Triglycerides –

IN GROUP A – 13(65 %) was noted with Triglycerides, effect of treatment on Triglycerides was found Highly Significant from BT-DT (p value <0.0001), Highly significant from DT-AT (p value<0.0001), Highly significant from AT- AF (p value <0.0001)

IN GROUP B – 18(90 %) was noted with Triglycerides, effect of treatment on Triglycerides, was found Highly Significant from BT-DT (p value =0.0002), Statistically significant from AT- AF (p value =0.0228)

INTERPRETATION - GROUP A showed Highly Significant results from BT-DT, DT -AT & AT- AF, but GROUP B showed Highly Significant results from BT-DT, Statistically Significant results from AT- AF, Nothing significant results from DT -AT

INBETWEEN THE GROUPS - There is no difference in p value DT, AT & AF (=0.3333, =0.4951 & =0.9140) indicating Not Significant between the groups.

BT - DT - Due to the effect of rubbing, increased body temperature activates the enzymes in the capillaries disintegrate triglycerides into fatty acids and glycerol carried to liver for catabolism and liver excreted out through bile, thus triglycerides reduces. Catechin in khadira, curcumin in haridra, berberine in daruharidra reduces triglycerides by inhibiting adipogenesis and activating lipolysis.

DT - AT - During Snehapana, twak, haridra daruharidra reduces triglycerides byinhibition of adipogenesis and activation of lipolysis. Vacha - B asarone unblocks all macro micro channels of body, so LDL receptor system at cellular level capillaries may increase the activity of LPL found on endothelial cells lining capillaries in muscle and adipose tissue thus helpful in removing fattyacids of triglycerides.

In one of the study, it is proven that Madanaphala was highly significant in removing TSC and triglycerides, data support to that in the present study, vamana was highly significant in removing triglycerides.Haritaki, nagara, shunti, guda choosen in the present study increases the AT - AF - Highly significant result found after Vamana, due to increase of metabolism, proper formation of lipids takesplace, so after follow up, it is giving highly significant result in reducing triglycerides.

Not significant result found after Virechana, it acts less on triglycerides and statistically significant result found after follow up, due to increase of lipid metabolism after samsarjana krama and complete avoidance of causative factors,

3. Effect of treatment on LDL -

IN GROUP A – 8(40 %) was noted with LDL, effect of treatment on LDL was found Statisticaly Significant from BT-DT (p value =0.2625), Statisticaly significant from AT- AF (p value <0.0151)

IN GROUP B – 7(35 %) was noted with LDL, effect of treatment on LDL was found Statisticaly significant from DT-AT (p value=0.0075), Highly significant from AT- AF (p value =0.0040)

INTERPRETATION - GROUP A & B showed Statistically Significant results, but

GROUP B showed more Significant results from DT-AT compared to GROUP A.

INBETWEEN THE GROUPS - There is no difference in p value DT, AT & AF (=0.9789, =0.4153 & =0.6182) indicating Not Significant between the groups.

BT - DT - TSC in blood flush out by liver through bile by udwartana, cholesterol level reduces in blood. Liver is the organ, where cholesterol is packed along with triglycerides in the form of VLDL, IDL, LDL throws to blood for disintegration, as cholesterol level decreases and formation of LDL also reduces.

During Udwartana, phenolic compounds in musta, catechin, adrenergic amine in gokshura and flavonoids, tannins in Devadaru, aragwadha reduces LDL by stimulatingbeta receptors to break down lipids in the body, this inturn enhance the metabolism of lipid and cholesterol breakdown.

DT - AT -During Snehapana, B - asarone in vacha increases conversion of cholesterol into bile, curcumin, berberine by increasing lipolysis reduces LDL Madanaphala best in removing cholesterol and triglycerides but due to moderate action on liver, it is less significant in removing LDL compared to Virechana. Due to direct effect of Virechana on liver (Pittasthana), it removes the LDL from the body in the form of cholesterol through bile and detoxify the liver and improves lipid metabolism

Nagara present in Virechana yoga, was statistically significant on cholesterol by decreasing it's biosynthesis and stimulates it's conversion into bile acids, also increased cholesterol fecal excretion.

AT- AF - Both the groups are statistically significant with 14% reduction in Group A and 18% reduction in Group B.

After shodhana, due to effect on liver by Vamana and Virechana, normal metabolism restored by liver, so proper and adequate amount of formation of LDL takesplace.

4. Effect of treatment on HDL -

IN GROUP A – 20(100 %) was noted with low HDL, effect of treatment on low HDL was found Statisticaly significant from AT- AF (p value <0.0031)

IN GROUP B – 8(40 %) was noted with low HDL, effect of treatment on low HDL was found Statisticaly significant from DT-AT (p value=0.0002), Statisticaly significant from AT- AF (p value <0.0001)

INTERPRETATION - GROUP A AND B showed Statistically Significant results from AT- AF, GROUP B showed Statistically Significant results from DT-AT

INBETWEEN THE GROUPS - There is no difference in p value DT, AT & AF (=0.7204, =0.6198, =0.2590) indicating Not Significant between the groups.

BT - DT - There is increase in HDL values after Udwartana but statistically not significant, because Udwartana only disintegrates cholesterol and triglycerides in peripheral tissues, not have much role on liver where the formation of HDL takesplace, but the drugs like gokshura, haritaki increases HDL values.

DT - AT - Virechana has direct effect on liver (Pittasthana), from where production of HDL takesplace, therefore after Virechana statistically significant increase of HDL.

AT - AF - Group A was statistically significant with 12% reduction and statistically significant with 16% reduction in Group B.

Due to the effect of Vamana and Virechana, reduction of cholesterol is reduced so burden on liver also reduced therefore lipid metabolism is corrected in the liver and homeostasis is restored. By which proper formation of HDL takesplace which is statistically significant.

RESULT -

Overall result of **GROUP A** was Highly significant from BT-AT (t value - 17.1265, p value <0.0001)

Overall result of **GROUP B** was Highly significant from BT-AT (t value - 19.0766, p value <0.0001)

OVERALL DISCUSSIONS –

Acc. to acharya vagbhata, if the physician wants to administer snehapana and shodhana to the persons who are mamsala, medura, bhuri shleshma and vishamagni, advised to perform rookshana chikitsa first followed by snehapana and shodhana to avoid the complications arises due to direct administration of snehapana without Rukshana. In Ruksha udwartana, dry powder of Musta aragwadadhi choorna was applied & rubbed over the skin are absorbed by Bhrajakapitta/Twachagni (due to increase of local temperature). Due to its, laghu, ruksha guna predominance of Agni & Vayu Mahabhuta pacifies Snigdha & Pichila guna of Kapha & subsequently decreases Kledatwa of ama, kapha and dushita meda, pacifies the lakshanas of medorogas like swedadhikyata, dourgandhyata of the sharira.

Deepana Pachana is essential and the first step as purvakarma before snehapana, In this study Musta churna is used for Deepana and pachana. Pachana helps in pachana of ama where as deepana helps in agni deepana and separation of doshas from dhatus (deepanaih dhaatubhyam pruthaktvam). Musta is having katu rasa, ushna laghu ruksha guna, ushna veerya, deepana, kapha vatahara, amahara, medohara It has its effect on rasadhatwagni and medadhatwagni. it is selected for amapachana here. Snehana and Swedana as a purvakarma causes aggravation (Vriddhi), increases fluidity (Vishyandana), suppuration (Pakata), removal of the obstruction at the level of srotas. (Srotomukha Vishodhanat) together snehana and sweda brings the dosha from shaka to koshta. (Swedair kostagatatwam). Vacha haridradi gana siddha taila is given for snehapana in arohana krama. It is mainly kapha vatahara, and does lekhana, bhedana, amahara, deepana and it is exclusively mentioned for Medoroga.

Vamana is selected in the present study, because Medoroga belongs to santarpanajanya vyadhi avastha for which Apatarpara line af treament is adviced. Langhana is a line of treatment adviced for rasapradoshaja vikaras. Rasadushti is present in Medoroga. Medoroga is a srotorodha (aavarana) pradhana vyadhi, So vamana due to its action of hrit, parshwa, marga vishodhana helps in removing apakwa pitta kapha and normalising the movement of vata thereby reduces kshudrashwasa, atipipasa, atikshudha swedadhikyata and raised total serum cholesterol, triglycerides and LDL.

In Medoroga, due to apathya ahara - viharaa, agnidushti will takes place, due to which vriddhi of pitta and kapha occurs, which does srotorodha and produces Lakshanas of Medorga. virechana karma is

a procedure which does srotoshuddhi, laghuta to the sharira thereby it reduces sarvakarmeshu asakta, kshudrashwasa, atipipasa, atikshudha swedadhikyata. As virechana karma corrects Agni, normalizes the function of intestine and liver, thus prevent the production of excessive formation of triglyceride & total cholesterol. Virechana karma stimulated the gall bladder to produce & Excrete Large amount of bile, which indirectly helps in the excretion of cholesterol from the body thereby reduces cholesterol and LDL in blood plasma.

CHEMICAL CONSTITUENTS:

Chemical constituents B- asarone inhibit pancreatic lipase activity (increases conversion of cholesterol into bile acids), flavonoids in prishnaparni and madhuka, triphala inhibit the cholesterol absorption from the intestine thus reduces cholesterol. kutaja bheeja is a potent purgative drug increases the diarrhoea due to increases peristalisis. Catechin in khadira, curcumin in haridra, berberine in daruharidra reduces triglycerides by inhibiting adipogenesis and activating lipolysis. Madanaphala containing Saponin, valeric acid reduces cholesterol. Haritaki containing Saponin, tannins, beta - sitosterol reduces cholesterol. Saindhava lavana (sodium chloride) decreases self diffusion of lipid within the lipid bilayer and can cause sodium ions to bind tightly to the lipids and excreted out of the body. Guda acts as purifying agent for intestine, stomach. twak, haridra daruharidra reduces triglycerides by inhibition of adipogenesis and activation of lipolysis. Vacha - B asarone unblocks all macro micro channels of body, so LDL receptor system at cellular level capillaries may increase the activity of LPL found on endothelial cells lining capillaries in muscle and adipose tissue thus helpful in removing fattyacids of triglycerides.

CONCLUSION:

- GROUP A - The results obtained showed statistically highly significant on Sarvakarmeshu asakta, kshudhra shwasa and atikshudha. Significant results were seen on swedadhikyata and non significant results is seen on atipipasa.
- GROUP B - The results obtained showed statistically highly significant on Sarvakarmeshu asakta, kshudhra shwasa. Significant results were seen on swedadhikyata and atikshudha and nonsignificant results were seen on atipipasa.
- GROUP A - The results obtained showed statistically highly significant on Total serum cholesterol, triglycerides. Significant results were seen on LDL and non significant results were seen on HDL.
- GROUP B- The results obtained showed statistically highly significant on Total serum cholesterol . Significant results were seen on triglycerides, LDL, HDL.
- In this study the combined effect of Udwartana followed by vamana and Virechana showed promising results
- Rightful combination of shodhana, bahya upakramas, shamana oushadi, diet & counselling together can yield best result in devastating disorder like Medoroga.

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