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RESEARCH ARTICLE

A CLINICAL STUDY OF EFFICACY OF VIRECHAN KARMA ON INSULIN RESISTANCE WITH SPECIAL REFERENCE TO SANTARPANJANYA VIKAR:A PILOT STUDY.

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Abstract

Insulin resistance is a pathological condition in which cells fails to respond normally to the human insulin. Obesity, chronic inflammation is associated with insulin resistance and it is responsible for the development of type 2 diabetes mellitus. Virechana karma has been showed effective result in insulin resistance especially in Santarpanjanyavikar (Medorog) by reducing Strotorodha(obstruction) and Shotha (inflammation) and improve action of insulin. Patients with Santarpanjanyavikar (Medorog) with HOMA IR more than 2 were planned to Virechana karma. Parameter for insulin resistance ,HOMA IR reduced in all patients after Virechana karma . So we can conclude that Virechana karma is effective in insulin resistance. In this pilot study sample size was too small, larger sample size is needed to confirm the results.

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Introduction:-

Worldwide 200 million people suffer from insulin resistance and 40% of these patients will develop type 2 diabetes mellitus.¹

Insulin resistance is defined as the decreased ability of insulin to stimulate glucose disposal into target tissues.² Increased hunger, lethargy are the symptom associated with insulin resistance. Acanthosis nigricans and skin tag may seen in insulin resistance.³ insulin resistance is responsible for the development of type 2 diabetes mellitus⁴

Obesity is a known risk factor for the development of insulin resistance.⁵ chronic inflammation can contribute to the development of insulin resistance⁶

Diabetes, inflammation, obesity can be correlated with Prameha, Shotha, Aamdosh, and Sthoulya respectively. All these condition mentioned in Santarpanjanya Vikar by Acharya Charak.⁷

In modern science there is no specific treatment for the insulin resistance, exercise weight loss, low carbohydrate diet mentioned for the management of the insulin resistance. As stated above we consider the insulin resistance under Santarpanjanya Vikar. Acharya Charak told Virechana karma for treatment of Santarpanjanya vikar.⁸

Homeostasis model assessment –estimated insulin resistance (HOMA-IR) was calculated from fasting glucose and fasting insulin as follows.

HOMA IR=Glucose (mg/dl) × fasting insulin (mU/l) / 405

HOMA –IR >2 was regarded as high⁹

Virechana Karma reduces HOMA IR and showed effective result in improvement of insulin resistance by reducing Strotorodha and homeostatis of Tridosha Virechanakarma also improve the symptoms like Kshudhatimatra, Pipasadhikya and Daurbalya.

The sample size of this pilot study was too small .large sample size needed to confirm the results.

Aim:

To study the effect of Virechan karma on insulin resistance with special reference to Santarpanjanyavikar (Medorog).

Objectives:

Primary objective:

To study the effect of Virechanakarm on insulin resistance with special reference to Santarpanjanyavikar (medorog).

Secondary objective:

1. To study the effect of virechanakarm on hematological parameter [fasting plasma insulin level, HOMA IR (homeostatic model assessment of insulin resistance),
2. To study the association between santarpanjanyavikar (medorog) and insulin resistance
3. To study the effect of virechana karma on signs and symptoms of insulin resistance.

Materials and Methods:-

Type of study design:

Prospective single arm clinical trial

Location of study:

In our institute.

Drug:

Rukshan Dravya:

Triphala churna [Haritaki (Terminalia chebula), bibhitaka (terminalia belerica), Amalaki (embilica officinalis)]
Musta churna, (cyperus rotundus) Shunthi churna (zingiber officinale) each 2g before meal 2 times will be continued till sign and symptom of aampachan occurs.

Snehapan:

Gogrita(Cow ghee) in increasing order till Samyaksnigdhalakshana occurs.

VirechanaDravya-

Triphalanishottar kwath(decoction of triphala and operculina terpanthum)40 ml with Erand tail (oil of recinus communis).

Dose will be decided according to patient.

Preparation of Virechanakwath:

1. collection and authentication of row material (Triphala, Nishottar,Erand tail)
2. preparation of Triphalanishottar kwath by standard procedure given in Sharangdhar samhita¹¹
3. Erand tail added in prepared triphalanishottarkwath .
4. Dose of Erand tail decided according to patient.

Selection of patient:

It is quite difficult to assess insulin resistance in patient hence it is decided that patient will be screened for insulin resistance with following criteria.

When 3 out of 7 are present Patient will be selected for Insulin even Assessment.

1. BMI>23
2. Family history of DM
3. History of PCOS (polycystic ovary syndrome)

4. Central obesity Waist circumference (>90 cm in male; >80 cm in female)
5. Acanthosis nigricans
6. Skin tag
7. History of steroid

Inclusion criteria:

1. HOMA IR > 2
2. BMI > 23 to 27.9
3. Age between 18 to 45 years irrespective of gender

HOMA IR = Fasting Glucose (mg/dl) × Insulin (μU/L)

n=405 if fasting glucose in mg/dl

n=22.5 if fasting glucose in mmol/dl

Exclusion criteria

1. Patient who are not willing for treatment
2. Patient in critical condition
3. Pregnant women
4. Virechanayogya

Assessment criteria:**Objective parameter**

Assessment of efficacy of virechan karma on insulin resistance will be on HOMA IR

Sr. No.	Investigation	Before treatment	After treatment
1.	SERUM INSULINE HOMA IR (homeostatic model assessment of insulin resistance)		
2.	FASTING SERUM INSULIN		
3	FASTING BLOOD GLUCOSE		

Assessment of the patient will be done on the basis of following criteria.

Subjective parameter¹²

1. Daurbalya		grade
Absent-		0
Weakness after doing heavy physical exercise-	1	
Routine activity disturbed but not ambulatory-	2	
Ambulatory		3
2. kshudhatimatra		
Usual routine		0
Slightly increased (1 meal extra)		1
Moderately increased (2 meal extra)		2
3. pipasaadhikya		
Feeling of thirst, 7-9 times/24hr and relived by drinking water-	0	
Feeling of moderate thirst >9-11 times/24 hr relived by drinking water-	1	
Feeling of excess thirst >11-13 times/24 hr not relived by drinking water-	2	
Feeling of severe thirst >13 times/24 hr not relived by drinking water-	3	
All parameter assessed before and after treatment		

Research methodology:-

1. This study was conducted as single arm prospective clinical trial, a pilot study
2. Patient with insulin resistance were told about the trial and informed consent was taken
3. Virechana karma included-

1. Rukshanadravya (Triphala, Musta, Shunthi). Each 2 gm before meal twice a day. Duration of rukshsan will be change according to signs and symptoms of aampachan.
2. Snehapana (Goghrita) in increasing order for 5 days. Snehapana will be stop according to samyakasnigdhalakshan.
3. Virechana with triphala ,nishottar kwath 40 ml with yerand tail.
4. Dose of yerand tail decided according to patient.
5. Sansarjankrama.

Observation and results:-

In present study a clinical trial, single arm study had been carried out on 6 patients of insulin resistance.

Table no 1:-observation and effect of virechana karma in 6 patient

Sr no	Sr insuli n BT	Sr insuli n AT	Fastin g glucos e BT	Fastin g glucos e AT	HOM A IR BT	HOM A IR BT	Before ruksha n sympto m	After ruksha n sympto m	Snehap an duratio n (day)	Yerandsne ha kwatha in ml	Virecha n veg
1	41	15.4	90	75	9.1	2.85	+	0	7	40	8
2	22	13.7	94.5	85.5	5.1	2.89	+	0	6	40	7
3	16.6	15.2	108.9	90	4.46	3.37	+++	+	4	30	4
4	30.5	30.1	100	75	7.53	5.64	++	+	4	30	6
5	11.2	14.6	91	91	2.51	3.2	++	0	3	30	2
6	28.1	20	92	90	6.38	4.4	+++	+	3	30	2

+ jivha sam,

++ jivha sam, anga gaurav

+++ jivha sam , anga gaurav ,picchil malpravritti

Table no 2:-Effect of virechana karma on HOMA IR, fasting serum insulin,

Parameter	BT	AT	% of relief
HOMA IR	5.84	3.72	64%
SERUM INSULIN	24.9	18.2	73%
FASTING GLUCOSE	96	84.41	89%

Table no 3: Effect of virechana karma on subjective parameter

Sr no	Symptom	Symptom score		
		BT	AT	diff
1	Daurbalya	10	3	7
2	Kshudhatimatra	10	2	8
3	Pipasadhikya	11	5	6

Discussion:-

In this study 6 individual fulfilling the criteria for the diagnosis of insulin resistance were selected. Complete history and written consent of individuals were taken.

Effect on HOMA IR, fasting blood glucose and fasting insulin

HOMA IR which is the main assessment criteria for insulin resistance was reduced by 64% as showed in table no2

Fasting blood sugar –fasting blood sugar was reduced by 89%.as showed in table no2

Fasting insulin -fasting insulin was reduced by 73% as showed in table no2.

Individual patient wise data of objective parameter (before and after virechanakarma)

Effect of virechana karma on symptomatology

Insulin resistance usually have no signs and symptoms but increased hunger, thirst, lethargy,inability to focus, high blood pressure, increased cholesterol level may found in individuals having insulin resistance

In this study, we consider insulin resistance condition may develop due to Santarpanjanyavikar described in CharakSamhita so we assess the symptom like Kshudhadhikya, Pipasadhikya and Daurbalya.

1. Daurbalya- mean score of daurbalya in 6 patient was 10 and after Virechana karma it was 3
2. Kshudhadhikya-mean score of kshudhadhikya in 6 patient was 10 and after virechana karma it was 2.out of 6 patient one patient had kshudhadhikya remains same after virechana karma.
3. Pipasadhikya- mean score of pipasadhikya before virechana karma was 11 and after virechana it was 5.

Probable mode of action of virechana karma-

Obesity, chronic inflammation is mainly responsible for insulin resistance. Both are compare with Sthoulya, Aamdoah and Shoth which is included in Santarpanjanyavikar described by Acharya charak. While stating the management of Santarpanjanyavikar, virechana is the first line of treatment. Hence we planned virechana karma in insulin resistance.

For virechana karma we used Erand sneha along with Triphalanishottar kwatha.

Virechanadravya have Ushnna, Tikshna ,Sukshma and vyavayi guna(properties) ,due to these properties it produces chedan of dosha and comes to koshta. Due to Prithavi and Jalamahabhutadhikya. The dosha eliminated through gudamarga.

Virechana karma clears the Srotorodha(obstruction), normalizes the Agni and brings homeostasis of Tridosha. Due to this it may improve insulin sensitivity and reduce insulin resistance.

Conclusion:-

Virechana karma reduces HOMA IR and showed effective result in improvement of insulin resistance by reducing Srotorodha(Obstruction) and homeostasis of Tridosha. Virechanakarma also improve the symptoms like Kshudhatimatra, Pipasadhikya and Daurbalya.

The sample size of this pilot study was too small .large sample size needed to confirm the results.

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