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Case Report

Integrated Yoga and Naturopathy module in management of Metabolic Syndrome: A case report

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ABSTRACT

A 50-year-old male participant with sedentary lifestyle, diagnosed with Metabolic Syndrome (MetS) [obesity, Type-2 diabetes mellitus, hypertension] and hypothyroidism since 2013, was administered integrated Yoga and Naturopathy (IYN) for 6 weeks as a tailor made individualized protocol at the residential integrative medical facility in Bangalore between October and November 2015. The results showed reduction in weight (97.9 kg to 74.6 kg), Body Mass Index (BMI) (35.1 kg/m^2 to 27.86 kg/m^2), total cholesterol (192 mg% to 145 mg%), triglycerides (153 mg% to 90 mg%), Low Density Lipoprotein (LDL) (124 mg% to 81 mg%), High Density Lipoprotein (HDL) (40 mg% to 46 mg%), fasting blood glucose (110 mg/dl to 75 mg/dl), postprandial glucose (267 mg/dl to 100 mg/dl), glycated hemoglobin (HbA1c) (7.8%–7.1%), Thyroid Stimulating Hormone (TSH) (6.90 $\mu\text{IU/ml}$ to 3.052 $\mu\text{IU/ml}$). Following the intervention, the anti-hypertensive, oral hypoglycemic, thyroid raising and analgesic medicines were not required to be continued. His knee pain minimized on discharge as observed on a Visual Analog Scale. He had an improved feeling of wellness and overall functional health. All his parameters were within normal range at the 12-weeks follow-up, as he had incorporated the lifestyle program into his daily routine. This case report suggests that lifestyle change by integration of specific non-drug Yoga and Naturopathic intervention is useful in the management of MetS.

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1. Introduction

Metabolic syndrome (MetS) is a common disorder associated with obesity [1]. The National Cholesterol Education Program (NCEP) defines MetS as 'those subjects with 3 or more of the following 5 cardiovascular risk factors: 1) central obesity (waist circumference: men >102 cm; women >88 cm); 2) elevated triglycerides ($\geq 150 \text{ mg/dl}$); 3) diminished high-density lipoprotein (HDL) cholesterol (men <40 mg/dl; women <50 mg/dl); 4) systemic hypertension ($\geq 130/\geq 85 \text{ mm Hg}$); and 5) elevated fasting glucose ($\geq 110 \text{ mg/dl}$) [2]. The revised NCEP definition includes patients being treated for dyslipidemia, hyperglycemia, or systemic hypertension. MetS affects about a third of the population in urban areas

in South Asia [3]. In such cases, early detection, intervention, and secondary prevention are essential.

Non-pharmacological lifestyle interventions are recommended for management of MetS. There are published reports of the significant effect of individual components of naturopathy like calorie restriction and therapeutic fasting on the health status of MetS [4,5]. Yoga, being a potent non-pharmacological lifestyle intervention, has been reported to be a successful complementary treatment for MetS. In yogic terminology, MetS, is considered as *Adhija-Vyadhi*, being of known psychosomatic origin. According to an ancient yogic text, *Yoga Vasistha*, *Adhija-Vyadhi* are the diseases that originate in the mind (*Adhi*) and gain access through the vital energy to the physical body and settles in as a physical disease (*Vyadhi*) [6]. Yogic practices have shown to improve the insulin sensitivity [7] in diabetics and reduction in weight [8] and blood pressure [9] in cases of MetS. We report this case as a safe and effective possibility of integrating yoga and naturopathy in the management of MetS since there are no studies reporting such effects.

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2. Presenting concerns

Mr. SAG, a 50-year-old male participant with sedentary lifestyle, was admitted to the residential health home at Bangalore, on October 3, 2015. He had generalized weakness, fatigability, increased body weight, bilateral knee pain since 4 years. He also had hypertension since 1 year, diabetes mellitus and hypothyroidism since 3 years, with family history being negative for MetS.

3. Clinical findings

His body weight was found to be 97.9 kg, height 167 cms with a BMI of 35.1 kg/m². His pulse rate was 78 beats/minute and blood pressure 142/90 mmHg. Before admission, he was taking oral hypoglycemic medication (combination of glimepiride and metformin, BD, Voglibose 0.03 mg BD for 3 years), levothyroxine sodium 100 µg, OD (3 yrs), tab. Telmisartan 20 mg OD and tab. Aceclofenac, BD.

4. Diagnostic focus and assessments

Height was recorded on a stadiometer. Weight was recorded every week using an electronic research grade weighing scale. Resting blood pressure was measured during daily doctor's visit

using a standard mercury sphygmomanometer keeping the time of the day same. Pulse rate, respiratory rate and breath holding time were also recorded during the physician rounds. Visual Analog Scale (VAS) for knee pain was noted on a weekly basis. Blood glucose levels were monitored using a glucometer to avoid episodes of hypoglycemia as the participant was on restricted 800 calorie diet. The lipid profile, thyroid profile, and glucose profile were checked at baseline and post-intervention in the same laboratory. All the parameters of baseline, 6 weeks and follow-up are described in Table 2.

In Yogic understanding, MetS is classified as *Adhija Vyadhi* (stress borne illness), whereas Naturopathy adapts an approach of unity of disease, wherein all diseases are result of accumulation of toxins in the system, as a result of following non-natural lifestyle.

5. Methods

Following a detailed case history, initial counseling and obtaining signed informed consent, the intervention was planned by a team of consultants that included a physician, a naturopathy and yoga expert. Keeping a daily watch on the vital and blood parameters, the medications were tapered by the physician. His inpatient stay at the facility was for 6 weeks.

Table 1
Integrated Yoga Naturopathy (IYN) protocol.

Integrative yoga protocol for everyday		
Name of the practices	Details	Duration
Loosening practices	Joint loosening practices for hand, leg, neck and trunk	5 min
<i>Suryanamaskara</i>	12 counts	5 min
Breathing practices	Hand in & out breathing, Hand stretch breathing, Straight leg raising with breathing, <i>salabhāsna</i> Breathing	10 min
<i>Asana</i> practices	<i>Ardha chakrasana, Ardhakati Chakrasana, Padahastasana, Ardha Machendrasana, Vakrasana, Navasana, Parivrtta Trikonasana</i>	15 min
<i>Pranayama</i>	<i>Kapalabhati, Surya anuloma, Vibhagiya pranayama</i>	5 min
Relaxation	Deep Relaxation Technique (DRT)	5 min
Integrated naturopathy treatment	protocol for a week	
Days	9–10 am	2–3 pm
Monday	Neutral spinal spray	cold hip bath and GH Pack
Tuesday	Neutral underwater massage	General oil application and steam bath with chest compress
Wednesday	Full body massage	cold hip bath and GH Pack
Thursday	Neutral immersion bath	Cold throat pack and Mustered pack to knee
Friday	Cold Circular Jet	Oil application to knee and IRR
Saturday	Partial massage to hip and legs	Full mud bath
Sunday	Vibro massage	No treatment

GH pack—Gastro-Hepatic Pack, IRR—Infrared rays.

One-week Treatment protocol was repeated every week.

Note: The Naturopathy therapies were repeated on a weekly basis.

Table 2
Patient's status on admission, discharge and follow-up.

Variables		Date of Admission (Baseline)	Date of discharge (6 weeks)	14-week follow-up	18-week follow-up
General parameters	Weight (kg)	97.9	77.6	76.5	74.3
	BMI (kg/m ²)	35.1	27.8	27.2	26.6
Blood pressure	Systolic (mmHg)	142	120	122	118
	Diastolic (mmHg)	90	74	74	72
Lipid profile	Total Cholesterol (mg%)	192	145	152	163
	Serum Triglycerides (mg%)	153	90	92	85
	HDL (mg%)	40	46	48	46
	LDL (mg%)	124	81	92	106
Thyroid profile	TSH (µIU/ml)	6.90	3.052		5.20
Blood glucose	FBS (mg%)	110	75	86	84
	PPBS (mg%)	267	100	124	134
	HbA1c (%)	7.8	7.1	6.6	5.8
VAS for pain	VAS for knee pain	6	1	1	1
	VAS for neck pain	5	1	1	0

kg – Kilograms, kg/m² – Kilogram/meter², mmHg – millimeters of mercury, mg% - milligrams/100 ml of blood, µIU/ml – micro International Units/milliliters.

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