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AYURVEDA MANAGEMENT OF POST COVID-19 RESPIRATORY ILLNESS-A CASE STUDY

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ABSTRACT

World community is facing a pandemic of novel corona virus disease (COVID-19) caused by Severe Acute Respiratory Syndrome Corona virus 2 (SARS-CoV2). The pandemic has spread globally 221 Country with more than 76. 81 crore positives cases and 69. 45 lakh death, In India there are 4. 49 crore positive cases and 5. 31 lakh death reported on 21st June 2023. (WHO website). Covid-19 not only affect in active periods it affects post infections also. Post covid-19 sequelae is estimated to affect approximately 10% of those tested positive for the SARS-CoV-2. **Objective:** To understand and analyse the effect of rasayana in the Post Covid-19 respiratory illness. **Materials and methods:** Diagnosed case of post covid-19 was randomly allocated to ayurvedic set of classical treatment. A male patient aged about 32 presented with post covid-19 respiratory symptoms Investigations showed – H\\o covid 19, Spirometry-moderate obstruction FVC = 88. 70 FEV1 = 58% FEV1 / FVC = 67. 91 DI DIMER = 660. 52 ng/ml LDH = 230mg/dl. The intervention was virechana followed by vyadhi pratyanika rasayana Shringarabhra rasa with katphaladi kashaya anupana. **Observation and result:** The subject presented with Shwasa, Kasa, Arohanaayasa, Anidra, Dourbalya etc, were found improved after intervention, Spirometry have shown significant improvement **Conclusion:** So, it can be concluded that Virechana and Shwasahara rasarasayana along with

pathya and life style modification improve subjective and objective parameters of Post covid -19 respiratory illness. Which is possible only with classical Samhita based ayurvedic clinical approach. This is a virgin novel applied approach developed based on clinical outcome.

KEYWORDS: SARS COVID-19, post covid illness, Shrungarabhra rasa, Rasayanaa.

INTRODUCTION

world community is facing a pandemic of novel corona virus disease (COVID-19) caused by Severe Acute Respiratory Syndrome Corona virus 2 (SARS-CoV2).[1] The pandemic has spread globally 221 Country with more than 76. 97 crore positives cases and 69. 55 lakh death, In India there are 4. 49 crore positive cases and 5. 31 lakh death reported on 16th August 2023. (WHO website).[2] Covid-19 not only affect in active periods it affects post infections also. Scientific and clinically evidence is evolving on the Sub acute and long-term effects of COVID‑19 which can affect multiple organ systems. Early reports suggest residual effects of SARS COV 2 infections such as Fatigue (Dourbalya), Dyspnoea (Shwasa) Chest pain (Parshwashoola), Arthralgia(Angamarda) and declined quality of life[3] Post covid-19 sequelae is estimated to affect approximately 10% of those tested positive for the SARS‑CoV‑2. Persistent cough, breathlessness, fatigue, and myalgia is common. Lung fibrosis and pulmonary thromboembolism have been reported with increased frequency among those who survive severe COVID pneumonia.[4]

During covid-19 infection patient will enter in a situation unable to avoid many medications like steroids, Antibiotics, Antihistamines etc. The intake of these medicines in a long course can cause complications like Gara visha lakshanas.[5] In Ayurveda concept of pandemic mentioned as JANPADODHWANSHA[6] by Acharya charak, Shushruta has given the word MARAKA, Bhel has referred to it as JANMAARA. In these pandemic one or more condition kasa, shwasa, pratishyaya, shiroruja, jwara, aruchi, dourbalya may be present. In COVID-19 diseases merely all these symptoms commonly found in shadrupa rajayakshma considered as roga samuhana. Thus, there is balance between the clinical presentation of COVID- 19 and Rajayakshma.[7] The maximum impact of covid-19 is on respiratory system however every structure is affected by it but the present case study is more focus on respiratory presentation hence to give the clinical base for the role of deepana, pachana, jwarghna, kasa swasahara, rasayana, dhatubruhmana activity.

MATERIALS AND METHODS

CASE REPORT

A 32-Year-old male patient came by walking (OPD NO-236 on 25 jan 2023) presented with shwasakruchrata, kasa, arohana ayasa, parswashula, karshya, anidrata, vishada, kampa, trika graha for 2 year. Patient had lost 10 kg weight during these 2 years. He was treated medically for covid positive illness and sequel of post covid in tumkur, had not shown any significant improvement.

Table No 1: Showing Time Line of the Case.

Date	Clinical events and intervention
11/08/2020	Fever with chills, loss of smell sensation, cough, loss of appetite for which he underwent RTPCR test which was positive.
16/08/2020 (Image-1)	HRCT thorax plain was performed in Krishna diagnostics tumkur by Dr Santosh Kumar. Impression: multiple patchy ground glass opacities noted in bilateral lung fields, CT severity score 12/25, CORAD grade -5 Underwent covid protocol treatment in tumkur.
10/01/2023	He consulted kayachikitsa OPD of TGAMC Ballari with the complaints of Shwasakruchrata, Kasa, Arohanaayasa, Parswashula, Karshya, Anidrata, Vishada, Kampa, Trika graha for 2 year. Patient had lost 10 kg weight during these 2 years. Where he investigated with spirometry tests and planned the treatment
5/01/2023 (Image-2, 3)	For the same complaints, in S W R divisional railway hospital clinical laboratory, Bangalore. investigated with blood tests like CBC, LDH, D-DIMER etc

Examination on admission

Patient was afebrile with pulse 96/min and blood pressure 110/80mm Hg.

Physical Examination

- CNS examination – Patient was conscious and well oriented to time, place and person.
- Respiratory and Cardiovascular system- No added sounds.
- Per abdomen- Nontender and bowel sounds were present.

Table No. 2: Showing Blood Investigation ON 11/01/2023(Image-1).

Haemoglobin	16. 5gm/dl
Total WBC	5680 cells/dl
Platelet count	2. 07 lakh micro L
RBC	6. 38 million /micro L
ESR	5mm at 1st hour
PCV	58. 1%
Biochemistry. LDH	230 mg/dl
D-DIMER	660. 52 ng/ml

Table no 3: Showing Treatment Given In TGAMC and Hospital Ballari.

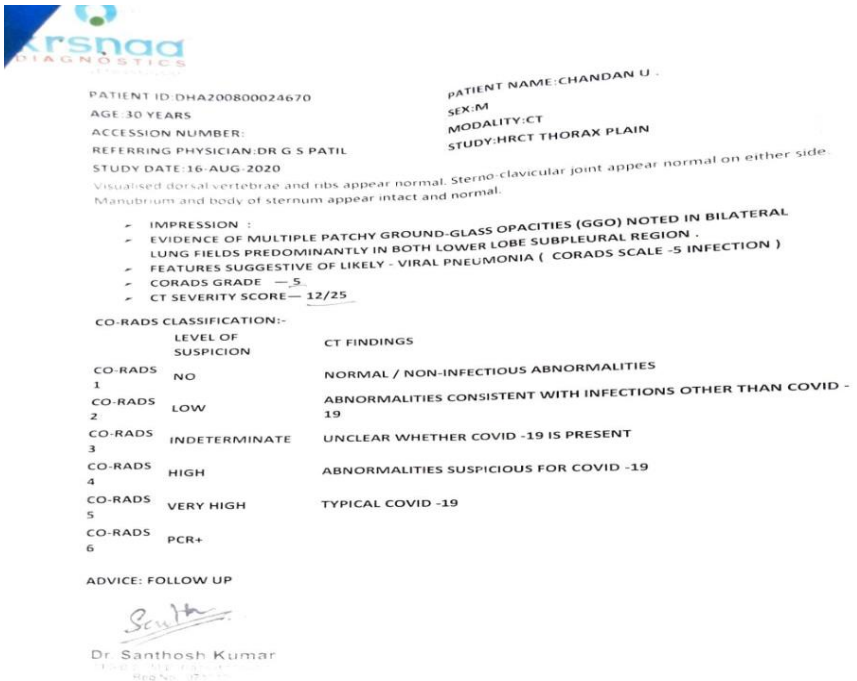
10/01/2023 – 12/01/2023	**Deepana Pachana Nidhigdhika Kashaya**[8] 25 ml with 25 ml ushnajala as anupana
13/01/2023 -16/01/2023	**Snehapana** with **Murchita tila taila** Test dose: 30ml 2nd day:50ml 3rd day:75ml 4th day:100ml
17/01/2023-19/01/2023	**Vishrama kala** Sarvanga abhyanga wih murchita tila taila followed by bashpa sweda
20/01/2023	**Virechana** wih **vishala pippali yoga**[9] 10gm wih madhu
21/01/2023 -25/2/2023	**Rasayana** yoga wih **shringarabhra rasa**[10] 500mg BD with **katphaladi Kashaya**[11] 25ml as anupana

RESULT

Marked improvement noted in both subjective and objective parameters.

Table showing changes in objective parameters before and after treatment

	Before treatment	**After treatment**
D-DIMER	660. 52 ng/dl	230 ng/dl**(Image-4)**
LDH	230 mg/dl	174 mg/dl**(Image-5)**
SPIROMETRY	**BT (Image-6)**	**AT(Image-7)**
FVC	88. 91	94. 24
FEV1	58	96. 65
FEV1/FVC	67. 71	106. 7



krsnaa DIAGNOSTICS

PATIENT ID:DHA200800024670
AGE:30 YEARS
ACCESSION NUMBER:
REFERRING PHYSICIAN:DR G S PATIL
STUDY DATE:16-AUG-2020

PATIENT NAME:CHANDAN U .
SEX:M
MODALITY:CT
STUDY:HRCT THORAX PLAIN

Visualised dorsal vertebrae and ribs appear normal. Sterno-clavicular joint appear normal on either side.
Manubrium and body of sternum appear intact and normal.

- IMPRESSION :
- EVIDENCE OF MULTIPLE PATCHY GROUND-GLASS OPACITIES (GGO) NOTED IN BILATERAL LUNG FIELDS PREDOMINANTLY IN BOTH LOWER LOBE SUBPLEURAL REGION .
- FEATURES SUGGESTIVE OF LIKELY - VIRAL PNEUMONIA (CORADS SCALE -5 INFECTION)
- CORADS GRADE —5.
- CT SEVERITY SCORE— 12/25

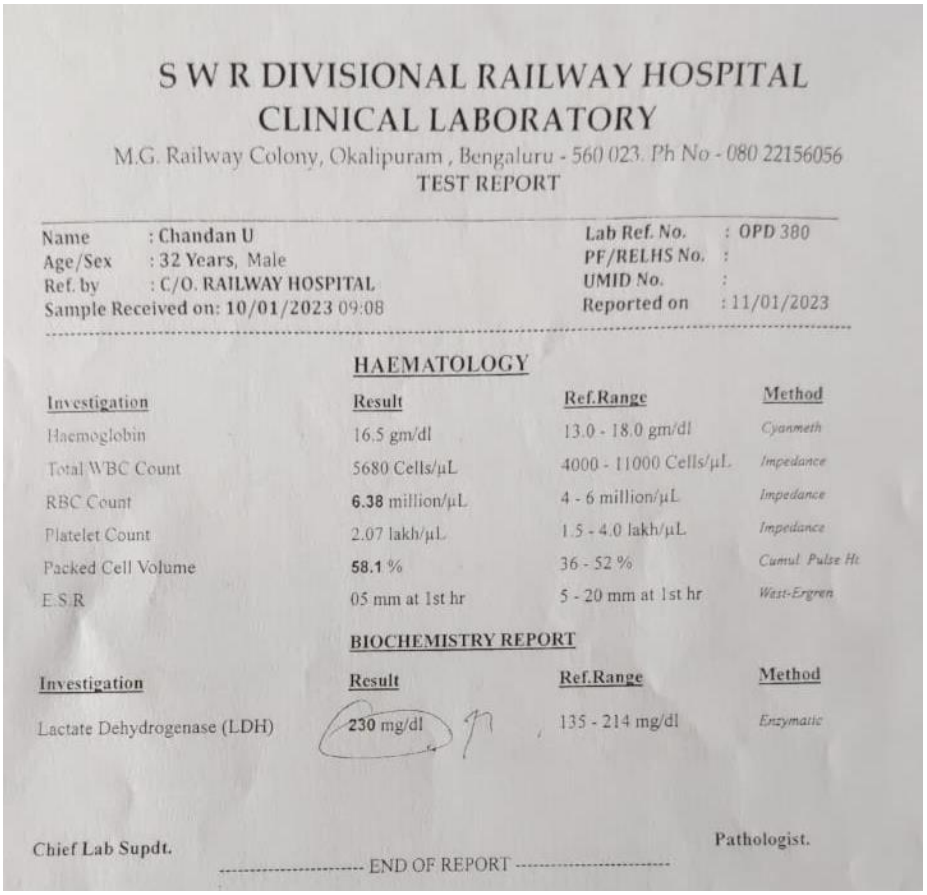
CO-RADS CLASSIFICATION:-

	LEVEL OF SUSPICION	CT FINDINGS
CO-RADS 1	NO	NORMAL / NON-INFECTIOUS ABNORMALITIES
CO-RADS 2	LOW	ABNORMALITIES CONSISTENT WITH INFECTIONS OTHER THAN COVID -19
CO-RADS 3	INDETERMINATE	UNCLEAR WHETHER COVID -19 IS PRESENT
CO-RADS 4	HIGH	ABNORMALITIES SUSPICIOUS FOR COVID -19
CO-RADS 5	VERY HIGH	TYPICAL COVID -19
CO-RADS 6	PCR+	

ADVICE: FOLLOW UP

Dr. Santhosh Kumar

Image 1.



S W R DIVISIONAL RAILWAY HOSPITAL
CLINICAL LABORATORY
M.G. Railway Colony, Okalipuram , Bengaluru - 560 023. Ph No - 080 22156056
TEST REPORT

Name : Chandan U
Age/Sex : 32 Years, Male
Ref. by : C/O. RAILWAY HOSPITAL
Sample Received on: 10/01/2023 09:08

Lab Ref. No. : OPD 380
PF/RELHS No. :
UMID No. :
Reported on : 11/01/2023

HAEMATOLOGY

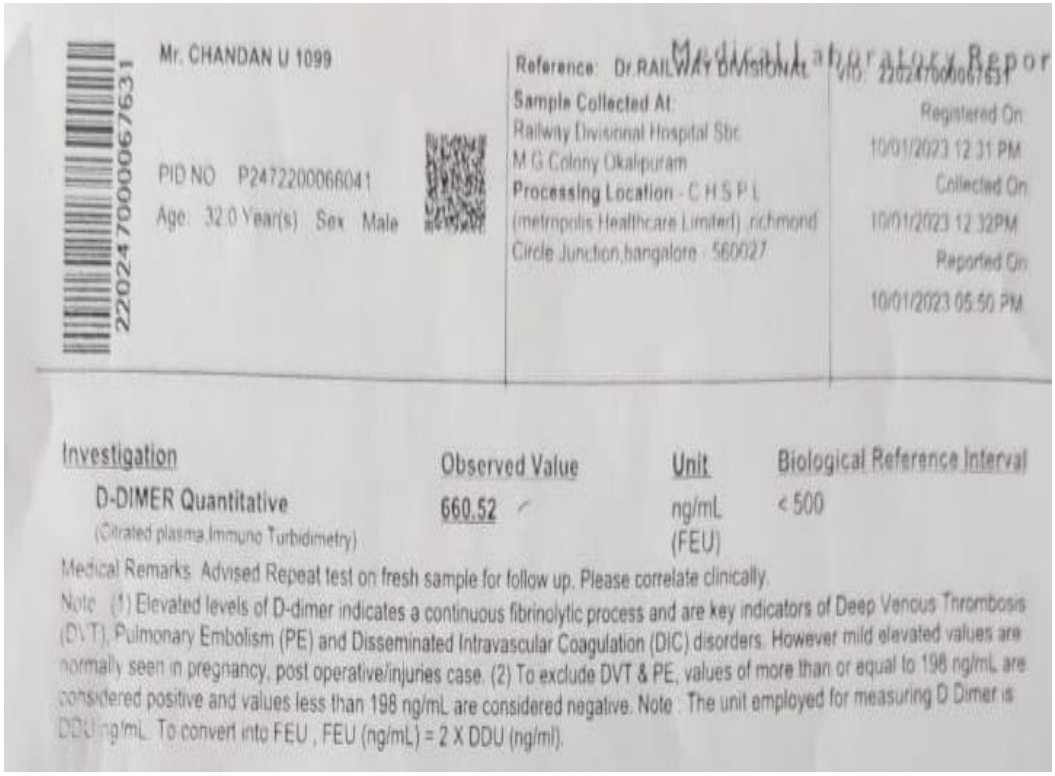
Investigation	Result	Ref.Range	Method
Haemoglobin	16.5 gm/dl	13.0 - 18.0 gm/dl	Cyanmeth
Total WBC Count	5680 Cells/µL	4000 - 11000 Cells/µL	Impedance
RBC Count	6.38 million/µL	4 - 6 million/µL	Impedance
Platelet Count	2.07 lakh/µL	1.5 - 4.0 lakh/µL	Impedance
Packed Cell Volume	58.1 %	36 - 52 %	Cumul. Pulse Ht
E.S.R	05 mm at 1st hr	5 - 20 mm at 1st hr	West-Ergren

BIOCHEMISTRY REPORT

Investigation	Result	Ref.Range	Method
Lactate Dehydrogenase (LDH)	230 mg/dl	135 - 214 mg/dl	Enzymatic

Chief Lab Supdt.
Pathologist.
END OF REPORT

Image 2.



Mr. CHANDAN U 1099
PID NO P2472200066041
Age 32.0 Year(s) Sex Male
22024700006763 1

Reference: Dr.RAILWAY DIVISIONAL
Sample Collected At:
Railway Divisional Hospital Sbc
M G Colony Okalipuram
Processing Location - C H S P L
(metropolis Healthcare Limited) ,richmond
Circle Junction,bangalore - 560027

Medical Laboratory Report
UID: 22024700006763 1
Registered On
10/01/2023 12:31 PM
Collected On
10/01/2023 12:32PM
Reported On
10/01/2023 05:50 PM

Investigation	Observed Value	Unit	Biological Reference Interval
D-DIMER Quantitative (Citrated plasma,Immuno Turbidimetry)	660.52	ng/mL (FEU)	< 500

Medical Remarks: Advised Repeat test on fresh sample for follow up. Please correlate clinically.
Note : (1) Elevated levels of D-dimer indicates a continuous fibrinolytic process and are key indicators of Deep Venous Thrombosis (DVT), Pulmonary Embolism (PE) and Disseminated Intravascular Coagulation (DIC) disorders. However mild elevated values are normally seen in pregnancy, post operative/injuries case. (2) To exclude DVT & PE, values of more than or equal to 198 ng/mL are considered positive and values less than 198 ng/mL are considered negative. Note : The unit employed for measuring D Dimer is DDU ng/mL. To convert into FEU , FEU (ng/mL) = 2 X DDU (ng/ml).

Image 3

DIAGNOSTIC REPORT

MC-2480

SRL Diagnostics

PATIENT NAME : CHANDAN U **REF. DOCTOR :** SELF

CODE/NAME & ADDRESS :C000027849 FORTIS - CUNNINGHAM ROAD - OPD FORTIS HOSPITAL-CUNNINGHAM ROAD 14, CUNNINGHAM ROAD, BANGALORE 560051 9900127890	ACCESSION NO : **0091WB000974** PATIENT ID : FH.11203811 CLIENT PATIENT ID: UID:11203811 ABHA NO :	AGE/SEX :32 Years Male DRAWN :07/02/2023 08:12:00 RECEIVED :07/02/2023 08:17:54 REPORTED :07/02/2023 10:07:53

CLINICAL INFORMATION :

UID:11203811 REQNO-5406846
OPD-OPD
BILLNO-111423OPCS008797
BILLNO-111423OPCS008797

Test Report Status **Final**	Results	Biological Reference Interval	Units
COAGULATION			
D-DIMER, PLASMA			
D-DIMER, PLASMA METHOD : PHOTOMETRIC	0.23	0.20 - 0.50	ug/ml

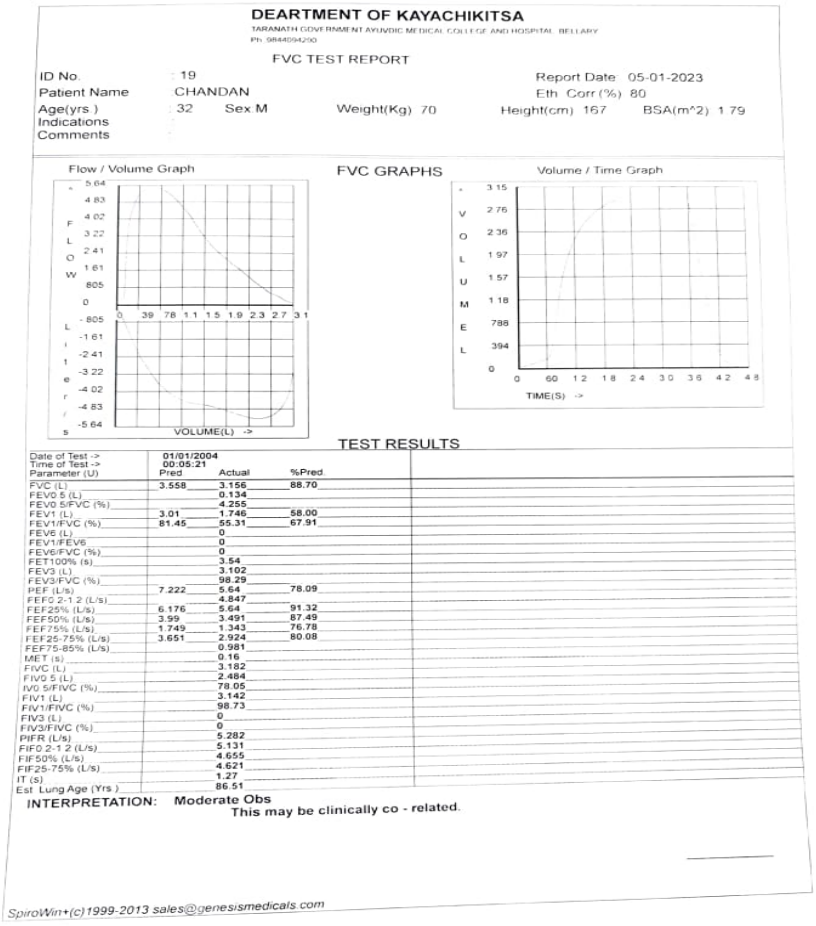
Interpretation(s)
D-DIMER, PLASMA-D-Dimer is a breakdown product of cross-linked fibrin, released following activation of the fibrinolytic system. It is a specific marker for fibrin clot lysis.

Increased D-dimer levels indicate the activation of the coupled blood procoagulant and fibrinolytic mechanisms. Increased D-dimer values are abnormal but do not indicate a specific disease state. Increased levels of D-dimer have been reported in the following cases, deep vein thrombosis (DVT), embolisms, DIC, hemorrhages, surgery, cancers and cirrhosis of liver. The D-dimer levels also increase during pregnancy. In surgical cases, the D-Dimer level generally rises in the first 2 to 3 days post-operatively. If the elevated D-dimer level persists, or tends to rise further, it is a warning sign of an impending or an ongoing thromboembolic episode. Although a negative D-dimer test does not completely rule out thrombosis, it is a useful adjunct in the diagnostic work up. Monitoring of D-Dimer levels in DVT cases on oral anticoagulation is currently being used for determining the risk of recurrence of DVT and therefore, the duration of therapy.

False positive D-Dimer test results may be seen in the presence of high levels of rheumatoid factor (RF), elevated fibrinogen and slightest coagulation of the sample. A negative D-dimer test does not completely rule out thrombosis.

Disclaimer: This test should not be used to exclude deep vein thrombosis (DVT) or pulmonary embolism.

Image 5.



DEARTMENT OF KAYACHIKITSA

TARANATH GOVERNMENT AYUVDIC MEDICAL COLLEGE AND HOSPITAL BELLARY
Ph: 9844094290

FVC TEST REPORT

ID No. : 19
Patient Name : CHANDAN
Age(yrs) : 32 Sex M Weight(Kg) 70
Indications
Comments

Report Date 05-01-2023
Eth Corr (%) 80
Height(cm) 167 BSA(m^2) 1.79

Flow / Volume Graph

FVC GRAPHS

Volume / Time Graph

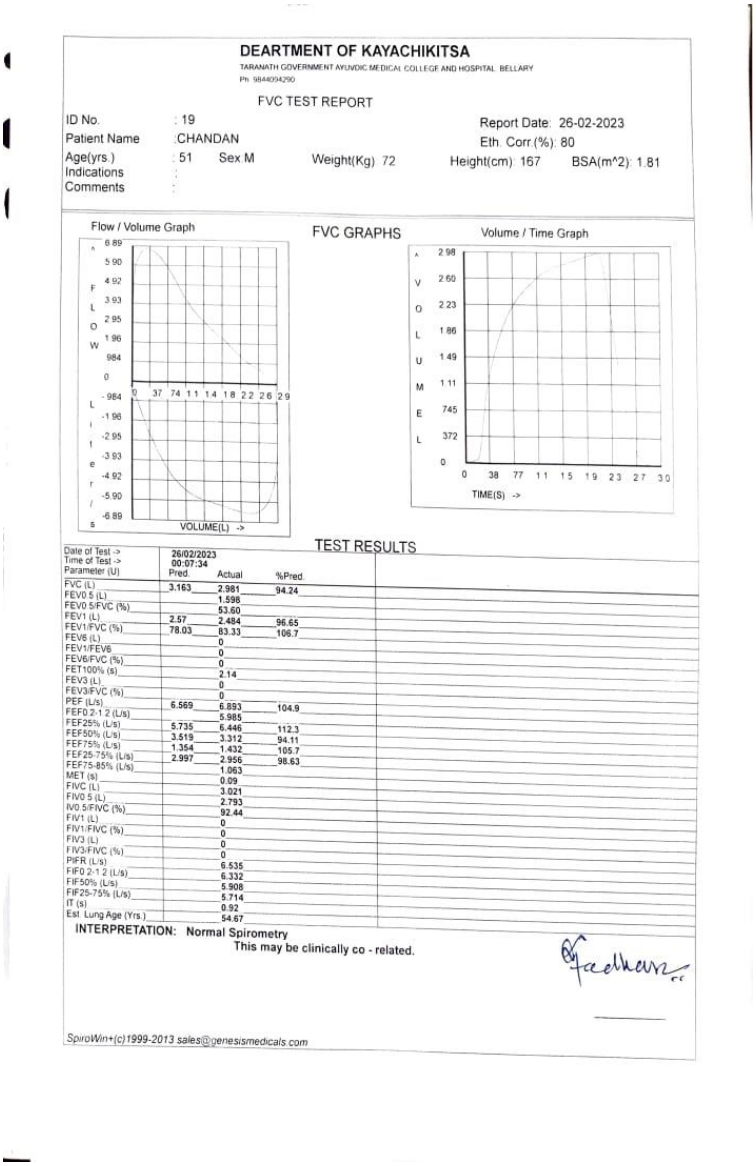
TEST RESULTS

Parameter (U)	Pred	Actual	%Pred
Date of Test ->	01/01/2004		
Time of Test ->	00:05:21		
FVC (L)	3.558	3.156	88.70
FEV0.5 (L)		0.134	
FEV0.5/FVC (%)		4.255	
FEV1 (L)	3.01	1.746	58.00
FEV1/FVC (%)	81.45	55.31	67.91
FEV6 (L)		0	
FEV1/FEV6		0	
FEV6/FVC (%)		0	
FET100% (s)		3.54	
FEV3 (L)		3.102	
FEV3/FVC (%)		98.29	
PEF (L/s)	7.222	5.64	78.09
FEF0.2-1.2 (L/s)		4.847	
FEF25% (L/s)	6.176	5.64	91.32
FEF50% (L/s)	3.99	3.491	87.49
FEF75% (L/s)	1.749	1.343	76.78
FEF25-75% (L/s)	3.651	2.924	80.08
FEF75-85% (L/s)		0.981	
MET (s)		0.16	
FIVC (L)		3.182	
FIV0.5 (L)		2.484	
IV0.5/FIVC (%)		78.05	
FIV1 (L)		3.142	
FIV1/FIVC (%)		98.73	
FIV3 (L)		0	
FIV3/FIVC (%)		0	
PIFR (L/s)		5.282	
FIF0.2-1.2 (L/s)		5.131	
FIF50% (L/s)		4.655	
FIF25-75% (L/s)		4.621	
IT (s)		1.27	
Est Lung Age (Yrs)		86.51	

INTERPRETATION: Moderate Obs
This may be clinically co - related.

SpiroWin+(c)1999-2013 sales@genesismedicals.com

Image 6.



DEARTMENT OF KAYACHIKITSA

TARANATH GOVERNMENT AYUVDIC MEDICAL COLLEGE AND HOSPITAL BELLARY

Ph: 9844094290

FVC TEST REPORT

ID No. : 19
Patient Name : CHANDAN
Age(yrs.) : 51 Sex:M Weight(Kg): 72 Height(cm): 167 BSA(m^2): 1.81
Indications :
Comments :

Report Date: 26-02-2023
Eth. Corr.(%): 80

Flow / Volume Graph

FVC GRAPHS

Volume / Time Graph

TIME(S) ->

VOLUME(L) ->

TEST RESULTS

Date of Test ->		26/02/2023		
Time of Test ->		00:07:34		
Parameter (U)	Pred.	Actual	%Pred.	
FVC (L)	3.163	2.981	94.24	
FEV0.5 (L)		1.598		
FEV0.5/FVC (%)		53.60		
FEV1 (L)	2.57	2.484	96.65	
FEV1/FVC (%)	78.03	83.33	106.7	
FEV6 (L)		0		
FEV1/FEV6		0		
FEV6/FVC (%)		0		
FET100% (s)		2.14		
FEV3 (L)		0		
FEV3/FVC (%)		0		
PEF (L/s)	6.569	6.893	104.9	
FEF0.2-1.2 (L/s)		5.985		
FEF25% (L/s)	5.735	6.446	112.3	
FEF50% (L/s)	3.519	3.312	94.11	
FEF75% (L/s)	1.354	1.432	105.7	
FEF25-75% (L/s)	2.997	2.956	98.63	
FEF75-85% (L/s)		1.063		
MET (s)		0.09		
FIVC (L)		3.021		
FIV0.5 (L)		2.793		
IV0.5/FIVC (%)		92.44		
FIV1 (L)		0		
FIV1/FIVC (%)		0		
FIV3 (L)		0		
FIV3/FIVC (%)		0		
PIFR (L/s)		6.535		
FIF0.2-1.2 (L/s)		6.332		
FIF50% (L/s)		5.908		
FIF25-75% (L/s)		5.714		
IT (s)		0.92		
Est. Lung Age (Yrs.)		54.67		

INTERPRETATION: Normal Spirometry
This may be clinically co - related.

SpiroWin+(c)1999-2013 sales@genesismedicals.com

Image 7.

DISCUSSION

Interpretation of rajyakshma makes sense to understand the sign and symptoms of Post Covid-19 Respiratory illness. There is lot of similarity in COVID-19 and Rajayakshma disease. Rajayakshma disease is Tridoshaja and the epidemiology and pathogenesis of COVID-19 suggests it as Tridoshaja. In Rajayakshma, spread is like Kustha, with Agantu Anubandhtva the causative factor is acquired from outside not resultant of the body's metabolisms and this is also true for COVID-19. Patient gets affected due to Sharira Sneha Ksheenta, Dhatukshaya, Ojakshaya and all these factors indicate the low immune response. This factor may be somewhat true in the case of the COVID-19 as the immune response is the main key factor that contributes to the prognosis of the disease. There are sets of symptoms described in the Rajayakshma first is the Shadrupa. It includes Kasa, Jwara,

Parshva Shoola, Swarabheda, Atisaara, and Aruchi. These symptoms are majorly present in most of the affected individuals. Shadrupa Rajyakshma w. s. r to Post Covid-19 Respiratory illness has been explored here.

Discussion on Nidhigdhikadi Kashaya

Nidhigdikadi Kashya contains Pippali, Shunti having katu tikta rasa does amapachana, deepana and stimulate the tongue receptors thereby correcting jataraagni owing to ama pachana in koshta which can reverse the rasavaha sroto dusthti and increase the agni.

Discussion on vishala pippali yoga

Vishalapippali yoga is explained in Charaka samhita kasa chikitsa was selected for virechana. Vishala pippali is combination of 4 drugs Vishala, Pippali, Musta and Trivrit in equal quantity. Thise are act as the virechaka. Vishala is a Tikshna virechaka having properties like Tikta Rasa, Laghu, Ruksha Tikshna Guna, Ushna Virya. It is included under group of virechaka dravyas by charaka balances kapha and pitta also indicated in shwasa. Ethanolic extracts of Citrullus colocynthis fruits possesses antihistamine activity which may be due to H1-receptor blocking or antiallergic activity. Trivrit is consider as Shreshtha Virechaka Dravya also acts on Tridosha. It has the properties of Laghu, Ruksha and Tikshna. Because of these properties removes the impurities from Sukshma srotas. It is mentioned as sukha virechaka. Pippali and musta due to their Deepana Pachana properties help in amapachanaand agni Deepana effect and also act as virechaka because of laghu, ushna and Tikshna gunas.

Discussion on shringarabhra rasa

Shringarbhra rasa is tridoshghna helps in hemopoietic system and provides nutrition thus helps to improve low oxyhaemoglobin. It acts as rasayana by which helps in repairing the damaged lung tissue it may be reason for the reduction in **Shwasakrichrata** and **Kasa**. Shringarbhra rasa does the dhatwagni dipana and dhatu poshana occurs. Collectively the dhatwagni will be increased and uthorothara dhatu poshana wiil occurring properly resulting in ojasara which can pacify the dourbalya and reduce **LDH**. Act as Raktaprasadana by its Tikta rasa and Rakta Sanjana, rasayana by Abharaka Bhasma combinedly may act on **Di-Dimer**.

Shringarbhra rasa clear Obstructed Airway by its Anti-Inflammatory, Bronchodilator, Expectorant Actions, which interrupt the pathogenesis of the disease indicating in **spirometry** value.

Katphaladi Kashaya is selected for Anupana act as kasaghna, shwasghna, shotahara. act as anti-tussive.

CONCLUSION

Post covid respiratory illness can be effectively treated by the ayurvedic intervention. Virechana followed by Shringarabhra Rasa Rasayana is effective in reversal of moderate obstruction in spirometry. Inflammatory markers like LDH, Di-DIMER can effective treated with ayurvedic treatment. Based on this single case study evidences, it can be concluded that Shodana and Rasayana Chikitsa effective in post covid 19 respiratory illness. Multicentric studies are further proposed.

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