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## Homoeopathic management of bronchiectasis: A case study

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### Abstract

On 15th March 2024, a 65-year-old female, Mrs A, came to the OP of Govt. Homoeopathic Medical College & Hospital Thiruvananthapuram, with complaints of difficulty in breathing, palpitation and cough with white sputum. She was unable to stand or walk. All complaints aggravated during movement, exertion, walking, night and lying down. Also she had weakness of body and oedema of both legs. She had recurrent attacks of these symptoms for last five years. Last month, she had fever with the respiratory complaints and diagnosed as bronchiectasis. Here, she was managed with *Ars. alb* 30 and *Ant.tart* 30 along with oxygen administration and discharged on 26/03/2024.

**Keywords:** Bronchiectasis, homoeopathy, pleural effusion

### Introduction

Bronchiectasis is characterized radiologically by persistent bronchial dilatation and clinically by a syndrome of cough, sputum production and recurrent respiratory infections. In the past, it was considered as a neglected disease, but in recent years there has been a resurgence of interest in the disease, leading to clinical research and the development of new treatments [1]. This non-cystic fibrosis bronchiectasis increases the morbidity and reduces the quality of life. Several diseases can cause bronchiectasis. Idiopathic bronchiectasis was present in 40% of patients, followed by a post-infectious cause in 20%, chronic obstructive pulmonary disease (COPD) in 15%, connective tissue disease (CTD) in 10%, immunodeficiency in 5.8% and asthma in 3.3% [2].

A commonly used classification system distinguishes cylindrical, varicose, and saccular or cystic bronchiectasis. Although comprehensive, this classification has no clinical or therapeutic use. The modern clinical definition includes daily mucosal mucus and chest imaging showing dilated and thickened airways [3]. In case of clinical suspicion, a thin-section computed tomography (CT) scan helps to confirm the diagnosis of bronchiectasis [4]. Radiological bronchitis is diagnosed by high-resolution computed tomography of the chest when the diameter of the bronchus exceeds the diameter of the adjacent blood vessel (broncho-arterial ratio > 1). However, age can affect the ratio of bronchial arteries, with studies showing that 40% of the healthy population over 65 years of age have an abnormally high ratio. Therefore, the term "clinically significant bronchiectasis" is used when the radiological diagnosis is relevant to the study [1].

Treatment aims to reduce exacerbations, improve quality of life and prevent the progression of the disease. This is achieved by the treatment of bronchitis, supporting the effectiveness of airway techniques, medicines, and mucolytic agents (eg, inhaled isotonic or hypertonic saline) in some patients. Bronchiectasis is a disabling disease that is increasing in prevalence and can affect people of all ages. A major challenge is to apply new methods of phenotyping and endotyping to identify patient populations that would benefit most from a particular treatment. The goal is to better target existing and new treatment methods and achieve better results [5].

### Case study

A 65-year-old female, Mrs A, came to the OP of Govt. Homoeopathic Medical College & Hospital Thiruvananthapuram on 15/03/2024 with complaints of difficulty in breathing, palpitation and cough with white sputum. She can't stand or walk. She was diagnosed having Bronchiectasis, admitted and managed with *Ars.alb* 30 and *Ant.tart* 30 along with oxygen administration and was discharged on 26/03/2024.

**Presenting complaints**

- Cough with white sputum, palpitation and difficulty in breathing. < lying down

- Oedema of whole body with pain in joints which was aggravated by motion, exertion and night



**Fig 1: Pedal oedema**

**History of presenting complaints**

Last month she had fever, cough with whitish expectoration and breathing difficulty. Admitted at General hospital and

diagnosed having bronchiectasis, congestive cardiac failure and vitamin D deficiency.

HEALTH SERVICES DEPARTMENT, KERALA Govt. General Hospital, Thiruvananthapuram DISCHARGE CARD / DISCHARGE SUMMARY	
Name of Patient : Alphonsia Address : TC 71/448 Valiyathura, Thiruvanthapuram Date of Admisssion : 09/03/24	Age : 65 Sex : F IP No. 3871 Unit/ward M6/1 Date of Discharge 14/03/24
Final Diagnosis : LRTI - B/L Bronchiectasis, CHF - Severe TR / Severe PAH Surgical Procedure if any : RV Dysfunction , Vit-D Deficiency.	
Brief History and clinical note : Patient presented with 40 low grade fever, Investigation cough with productive sputum 4 days and swelling of B/L lower limb. O/E : pt. conscious, oriented, Tachypnea ⊕, RR : 24, chest : Basal crepts ⊕, Jvp raised, B/L pitting edema ⊕	
Investigations : CBC / RBS, RFT, LFT, URE, AEC, Lipid profile, TST, Vit-D, CRP, Tropt, X-ray, ECG, USG abdomen, CT Scan, ECHO, NT-PROBNP	
Treatment and Progress - Course in hospital - briefly Pt got treated with O <sub>2</sub> inhalation, Phopped up, <del>Inj Lasix</del> T. Lasix 40mg 1-1-0 x 3 days, inj Lasix 20mg 1/0 x 8 days, T. Aldactone 25mg 0-0-1 x 5 days, T FLUWIR 75mg 1-0-1 x 5 days and other symptomatic treatment. Patient condition Condition and Discharge Worsened, Resting dyspnea ⊕, hence advised to take	
Advice on Discharge : the patient to MCH Adv 1) T. NAC 600mg 1-0-1 2) T. Aldactone 25mg 0-0-1 3) T. cholecalciferol box once weekly x 3 week. 4) T. Lasix 40mg 1-1/2-0 5) T. Dapagliflozin 10mg 0-1/2-0 6) T. SILDAENAFIL (20) 1-0-0	
to be reviewed on / after ..... OPD REFER TO MCH TVM, Respiratory Name & Designation Review in cardiology, MCH TVM.	

**Fig 2: Discharge Summary**

**History of previous illness**

Complaint started five years back as recurrent attacks of cough, breathing difficulty and palpitation. Often, she took tablets from nearby medical shop, which temporally relieved the symptoms.

**Family history**

Not relevant

**Personal history**

- Patient is illiterate, obese, economically and socially good.
- Married at the age of 17 years and has 2 children.
- She has non vegetarian diet with poor appetite and thirst for warm water. Prefer 4/5 cups of tea daily.
- Stool and Urine - irregular stool. Urine nothing particular
- Sweat - Increased and has sleep is disturbed due to cough.
- She has aversion for covering, desires fanning.
- Desire for sweets and spicy food
- Thermally hot patient
- She had menarche at the age of 13 years and menopause at 50 years.
- She conceived 4 times and had 2 death.

**Mind**

Aversion to company. Doesn't like to speak.

**Regionals**

- She complains about occasional headache.
- Has pain in back which is aggravated by walking.
- Pain in both knee joints with oedema.

**Physical examination**

- Obese and dark in complexion
- Pulse rate - 82/min
- Resp. rate - 20/min
- BP 120/80 mm Hg
- She has no pallor, no jaundice, no clubbing and no lymphadenopathy
- She has marked bilateral pitting pedal oedema.
- O/E chest - crackles present b/l
- SpO<sub>2</sub> - 77%

**Investigations**

- **ECG - 09/03/2024**
- Sinus tachycardia, HR - 100; Biphasic T wave V3, V4; T inversion V2.

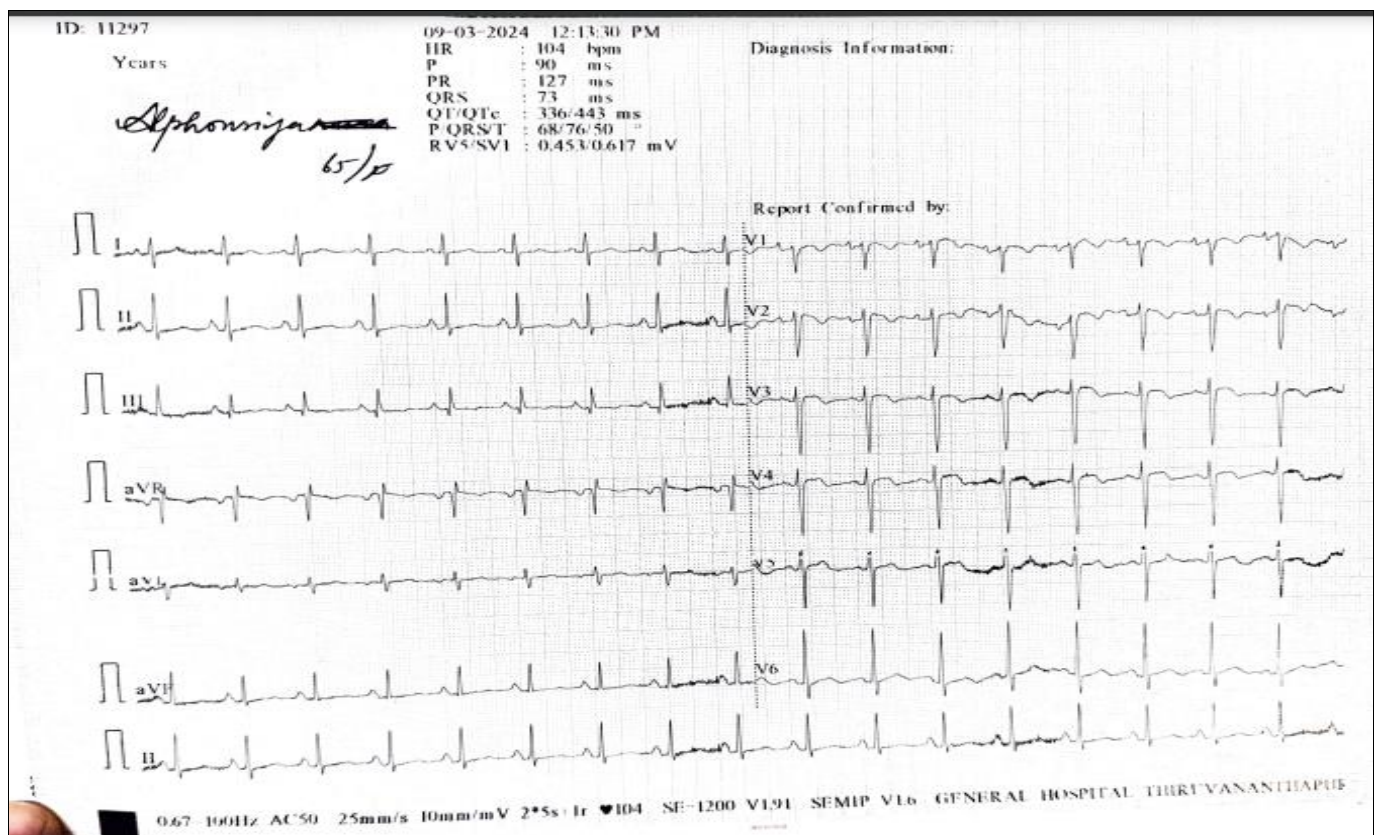


Fig 3: ECG Report

**Blood test 09/03/2024**

- Troponin T - 17.89 ng/
- NT Pro BNP - 4336 pg/ml



Fig 4: Blood Report on 08/03/2024

- USG Abdomen - 11/03/2024
- Left kidney increased in cortical echogenicity.
- Mild b/l pleural effusion;

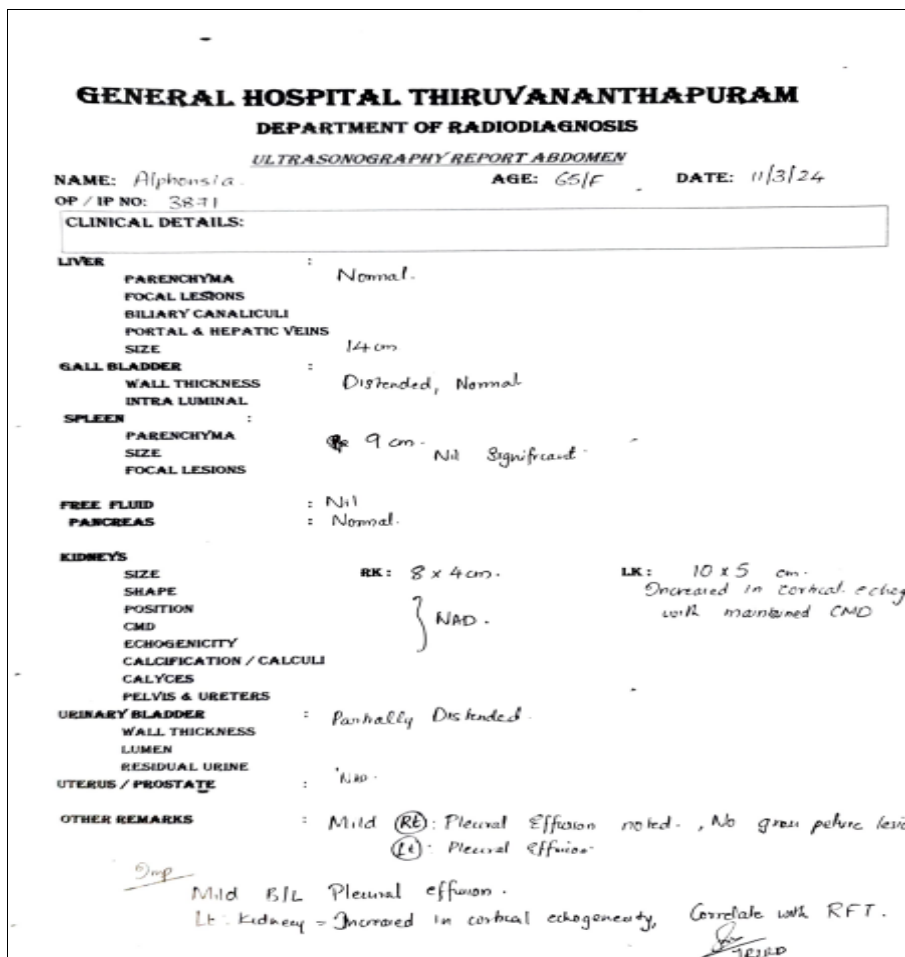


Fig 5: USG Report on 11/03/2024

09/03/2024 - Blood Test

T. Cholesterol - 100mg%; LDL - 62mg%

GENERAL HOSPITAL, THIRUVANANTHAPURAM					
KUNJACHOCK, THIRUVANANTHAPURAM - 695015 Ph: 4713516488					
Qualitative/Quantitative Laboratory Results					
UHID	T304870603240088	UHID Barcode			
Name	ALPHONSIYA	Bill No.	104871503442774		
Age/Gender	85 Y / Female	Bill Date	09/03/2024		
Module Number	808847878	Scheme	Pink Card (Priority)		
BIOCHEMISTRY LAB					
0970542178BloodPlan		Received	09/03/2024 10:48	Last Result Validated	09/03/2024 12:37
Sl No	Investigation Name	Observed Value	Units	Reference Range	Remarks
Sample Collected Date & Time: 09/03/2024 10:48					
1	Blood Potassium	4.0	mmol/L	3 - 5.5	
2	Blood Sodium	139	mmol/L	135 - 145	
3	LFT [Liver Function Test]				
3.1	Bilirubin Total	0.8	mg/dL	0.1 - 1.2	
3.2	Bilirubin Direct	0.2	mg/dL	0 - 0.3	
3.3	SGOT	29	U/L	8 - 48	
3.4	SGPT	32	U/L	8 - 40	
3.5	Alanine phosphatase	143	U/L	25 - 106	
3.6	Total Protein	6.1	g/dL	6 - 8	
3.7	Albumin	3.9	g/dL	3.5 - 5.5	
3.8	Globulin (G)	2.2	g/dL	2 - 4	
4	Lipid Profile				
4.1	Cholesterol	100	mg/dL	150 - 200	
4.2	HDL Cholesterol	24	mg/dL	35 - 60	
4.3	Triglyceride	72	mg/dL	40 - 160	
4.4	LDL Cholesterol (C)	62	mg/dL	130	
4.5	VLDL Cholesterol (C)	14	mg/dL	28	
5	BBG [Random Blood Sugar]	87	mg/dL	80 - 140	
6	UFT [Urea Creat MM]				
6.1	Blood Urea	18	mg/dL	15 - 40	
6.2	Creatinine	0.8	mg/dL	0.8 - 1.2	
6.3	Uric Acid	6.8	mg/dL	3.4 - 7.0	
Sample Validated by		Last Result Validated by			
A178824(Laboratory Technician Grade B)		A178824(Laboratory Technician Grade B)			
CLINICAL PATHOLOGY LAB					
Page 1 of 4			Report generated on: 09/03/2024 12:37		

Fig 5: Blood Report on 09/03/2024

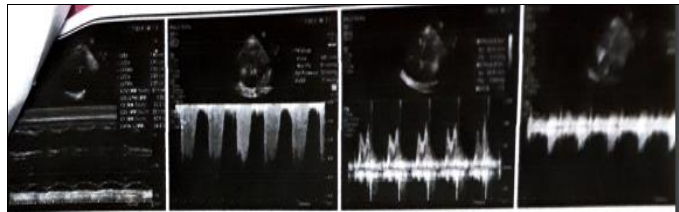
Qualitative/Quantitative Laboratory Results					
UHID	T304870603240088	UHID Barcode			
Name	ALPHONSIYA	Bill No.	104871503442774		
Age/Gender	85 Y / Female	Bill Date	09/03/2024		
Module Number	808847878	Scheme	Pink Card (Priority)		
IMMUNOASSAY LAB					
08043998BloodKIT4		Received	09/03/2024 10:48	Last Result Validated	09/03/2024 12:48
Sl No	Investigation Name	Observed Value	Units	Reference Range	Remarks
Sample Collected Date & Time: 09/03/2024 10:48					
7	Absolute Eosinophil Count	180	Cells/cmm	40 - 440	
8	CBC				
8.1	Haemoglobin	11.6	g/dL	12 - 15	
8.10	Red Cell Distribution Width-CV	14.6	%	12 - 15	
8.2	Total WBC Count	10600	Cells/cmm	4000 - 11000	
8.2.1	Neutrophils (%)	73	%	40 - 70	
8.2.2	Lymphocytes (%)	25	%	20 - 40	
8.2.3	Eosinophils (%)	02	%	1 - 5	
8.2.4	Basophils (%)	0	%	0 - 1	
8.2.5	Monocytes (%)	0	%	2 - 10	
8.4	Platelet Count	336	x10 <sup>9</sup> /cmm	160 - 400	
8.6	Erythrocyte Count	4.65	m/cmm	3 - 5	
8.8	PCV	33.9	%	36 - 47	
8.7	MCV	83.6	f	80 - 96	
8.9	MCH	25.0	Pg/fcl	27 - 32	
8.9	MCHC	29.9	%	32 - 36	
9	ESR	20	mm/hr	0 - 20	
Sample Validated by		Last Result Validated by			
SHEEJA P(Laboratory Technician Grade B)		SHEEJA P(Laboratory Technician Grade B)			
IMMUNOASSAY LAB					
0811440178BloodPlan		Received	09/03/2024 10:48	Last Result Validated	09/03/2024 12:12
Sl No	Investigation Name	Observed Value	Units	Reference Range	Remarks
Sample Collected Date & Time: 09/03/2024 10:48					
10	TFT (T3 T4 TSH)				
10.1	T3 Thyroxine	130.1	ng/dL	80 - 180	normal range(84.8-201.8)
10.2	T4 Thyroxine	8.5	ug/dL	5 - 12.5	normal range(5.3-14.06)
Page 2 of 4			Report generated on: 09/03/2024 12:30		

Fig 6: Blood Report on 09/03/2024

09/12/2023 - Echo cardiogram

Severe TR, mild MR

<b>ALPHONSIA 65Y</b>		Study Date: 11/03/2024	
Patient ID: 04481120240311	Accession #: _____	Alt ID: _____	
DOB: _____	Age: _____	Gender: F	Ht: _____
Institution: General Hospital, Trivandrum		WT: _____	BSA: _____
Referring Physician: _____		Performed By: _____	
Comments: _____			
<b>Adult Echo: Measurements and Calculations</b>			
<b>2D</b>			
LV Mass (Cubed)	249 g	RA Pressure	10 mmHg
<b>MMode</b>			
IVSd (MM)	1.60 cm	ESV (MM-Teich)	25.1 ml
LVIDd (MM)	3.93 cm	SV (MM-Teich)	42.0 ml
LVPWd (MM)	1.58 cm	FS (MM-Teich)	33.3 %
LVIDs (MM)	2.62 cm	EF (MM-Teich)	62.6 %
LVPWs (MM)	2.05 cm	EDV (MM-Cubed)	60.7 ml
IVS/LVPW (MM)	1.01	ESV (MM-Cubed)	18.0 ml
EDV (MM-Teich)	67.1 ml	SV (MM-Cubed)	42.7 ml
		TAPSE	1.47 cm
<b>Doppler</b>			
AV Vmax	9 mmHg	MVE/A	1.0
Max PG	152 cm/s	TR Vmax	61 mmHg
Vmax	152 cm/s	Max PG	390 cm/s
MV Peak E Vel	84.4 cm/s	Med E' Vel	5.42 cm/s
PG	3 mmHg	RVSP	71 mmHg
MV Peak A Vel	84.9 cm/s	E'/Med E'	15.6
Vel	84.9 cm/s	PV Vmax	3 mmHg
PG	3 mmHg	Max PG	79.1 cm/s
		Vmax	79.1 cm/s
ALPHONSIA 65Y    04481120240311    11/03/2024    Created: 11:55AM 11/03/2024    1/2			



**Comments**

DILATED RA, RV, PA  
 SEVERE TR, SEVERE PAH  
 RV DYSFUNCTION  
 CONCENTRIC LVH  
 NO RWMA  
 GOOD LV SYSTOLIC FUNCTION  
 GRADE 2 DIASTOLIC DYSFUNCTION  
 MILD MR  
 NO AR/AS  
 TAS/IVS INTACT  
 NO PE/CLOT

**Signature**  
 Signature: \_\_\_\_\_  
 Name(Print): \_\_\_\_\_  
 Date: \_\_\_\_\_

Fig 7: Echo cardiogram

C T Chest -on 13/03/2024  
 Impression - B/L Bronchiectasis.


<b>DEPARTMENT OF RADIODIAGNOSIS</b>	
<b>GENERAL HOSPITAL, THIRUVANANTHAPURAM</b>	
Name Mrs Alphonsa	Date : 11-3-2024
Age : 65	Sex: _____
Clinical details -	Imaging No. _____
<b>CT Scan Chest</b>	
Presence of bilateral bronchiectasis is noted. Cystic bronchiectasis is seen involving the anterior segment of right upper lobe, medial and lateral segments of middle lobe and medial basal segment of right lower lobe. On left side it involves all the basal segments of lower lobe with sparing the upper lobe.	
Alveolar densities suggesting consolidation are seen in the lingular segment. Small right sided pleural effusion is seen.	
No parenchymal mass lesion is seen.	
No significant mediastinal lymphadenopathy.	
Impression <u>Bilateral bronchiectasis</u>	
 Dr Lalyl alex Consultant Radiologist	

Fig 9: CT Scan -Chest

**Analysis**

- Aversion to company, doesn't like to speak. Anguish.
- Desire for sweets and spicy food
- Pain in both knee joints with oedema
- Cough with white sputum at night.
- Palpitation, aggravated by motion and exertion
- Difficulty in breathing. < lying down
- Oedema of whole body.

**Provisional diagnosis**

Bronchiectasis, CHF, TR

**Repertorization - rubrics**

- Respiration- difficult lying while
- Chest - palpitation, heart, exertion
- Stomach - Appetite, diminished
- Stomach - desires sweets
- Rectum - Constipation
- Mind - anguish
- Generality - heat sensation of
- Generality - dropsy, internal

**Medicines**

- Ars alb-18/8
- Lyc -17/7
- Sulph -17/7
- Cal.carb - 16/7
- Digita - 15/6
- Phos - 14/7
- Sulp -15/6
- Arg.nit - 14/6

**Observation and follow up**

16/03/24- Difficulty in breathing, palpitation and cough.  
 Can't sit or stand. Weakness+++  
 BP 120/80 mm Hg. O2 saturation reduced. Appetite and thirst -reduced;  
 Rx Carbo veg30/3D (1-1-1)  
 Apocynum Q (15-15-15).  
 17/03/24- Difficulty in breathing < exertion; palpitation;  
 cough with expectoration, oedema of Body. BP 120/70 mm Hg. O2 saturation reduced - 81%. Can't sit or stand.  
 Weakness+++ . Appetite and thirst - reduced.  
 Rx Ant.tart 30/2D (1 0 1)  
 19/03/24 & 20/3/24 - palpitation >, O2 saturation reduced - 67%. Can't sit or stand.  
 Rx repeat + Oxygen administration.



Fig 10: On 19/3/24



Fig 11: On 25/3/24

able to sit and walk with support. On 26/03/24, she was discharged.

Date		17/3/24	16/03/24	19/3/24
Difficulty in breathing	Exertional dyspnoea	palpitation	Cough with expectoration	oedema over whole body
A - acid	B -	T - red	U - NP	Appetite: Slog - disturbed due to cough
Throat: BP: 120/70 mmHg	SpO2: 70% (room)	Pulse: 85 bpm	Protein: 70%	Sleep: P: 30-40% E: 50-60% T: 10-15%
Bowel: SPO2: 81%	BP: 120/78 mmHg	Pulse: 90 bpm	SpO2: 50%	SPO2: 80%
Bladder: T - red	U - NP	S - Sordid	BP: 120/78 mmHg	Pulse: 83 bpm
Sleep: P: 30-40%	E: 50-60%	T: 10-15%	SpO2: 67%	SpO2: 67%
Blood pressure: e Ant tart 30/3D (1-1-1)	Q Condelia Q (15-15-15)	Rx	Rx	Rx
Physical findings: SPO2: 57%	Q Condelia Q (15-15-15)	Ant tart 30/3D (1-1-1)	Ant tart 30/3D (1-1-1)	Ant tart 30/3D (1-1-1)
Prescription: R.D. (15-15-15)	R.D. (15-15-15)	R.D. (15-15-15)	R.D. (15-15-15)	R.D. (15-15-15)

Date	23-03-24	24-03-24	25-03-24
Difficulty in breathing	Exertional dyspnoea < night	Exertional dyspnoea < night	Exertional dyspnoea < night
Cough with whitish expectoration >	Cough with whitish expectoration >	Cough with whitish expectoration >	Cough with whitish expectoration < night
Oedema over whole body >	Oedema over whole body >	Oedema over whole body >	Dark colored urine
A - G	B - R	A - G	B - R
T - G	U - NP	T - G	U - Dark colored
S - Sordid	S - Disturbed	S - Disturbed	S - Disturbed
BP: 118/70 mmHg	BP: 110/76 mmHg	BP: 110/70 mmHg	BP: 110/70 mmHg
SpO2: 71%	SpO2: 71%	SpO2: 72%	SpO2: 72%
Pulse: 90 bpm (normal)	Pulse: 110 bpm	Pulse: 100 bpm	Pulse: 100 bpm
Rx	Rx	Rx	Rx
Rpt ①, ②	Rpt ①, ②	Rpt ①, ②	Rpt ①, ②
			Sp night: 110/76 mmHg

Fig 12: Case record showing daily observations

Ant. Tart 30 / 2d and Kali mur 6x /4d was repeated in the following four days, along with O2 administration. 23/03/24 onwards cough and expectoration had slight relief. She was

**Discussion**  
 Studies conducted on Ars alb says, it increases reactive oxygen species (ROS) levels, decreases the mitochondrial transmembrane potential and triggers caspase-dependent

apoptosis in human CD4+ and CD8+ T cells. [6]. Important symptoms in Asr.alb are suffocative cough worse on lying, night. Expectoration is there, burning heat all over. Wheezing respiration [7]. Hahnemann in his "Chronic Diseases" says that the original malady that has miasmatic, chronic nature, once advanced and developed to a certain degree it can never be removed by the strength of robust constitution or diet [8]. Aphorism 7 says that the affection of vital force is outwardly reflected as disease and these symptoms determines the appropriate remedy [9].

### Conclusion

This 65-year-old female had the chief complaints as difficulty in breathing, palpitation, oedema and cough with white sputum. She was unable to stand or walk and came with the help of wheel chair. On second day onwards the SpO2 frequently began to vary, often reached 55%. Tinctures like *Aspidosperma* or *Grindelia* didn't worked. The 30<sup>th</sup> potency of *Ars.alb* and *Ant.tart* along with oxygen administration relieved her symptoms and was able to stand and walk.

### Conflict of Interest

Not available.

### Financial support

Not available

### References

1. Chalmers JD, Aliberti S, Blasi F. Management of bronchiectasis in adults. *Eur Respir J*. 2015 May;45(5):1446-62.
2. Gao Y hua, Guan W jie, Liu S Xia, Wang L, Cui J Juan, Chen R Chang, *et al*. Aetiology of bronchiectasis in adults: A systematic literature review. *Respirology*. 2016;21(8):1376-83.
3. Hacken NHT Ten, Wijkstra PJ, Kerstjens HAM. Treatment of bronchiectasis in adults. *BMJ*. 2007 Nov 22;335(7629):1089-93.
4. Hill AT, Sullivan AL, Chalmers JD, Soyza AD, Elborn JS, Floto RA, *et al*. British Thoracic Society Guideline for bronchiectasis in adults. *Thorax*. 2019 Jan 1;74(Suppl 1):1-69.
5. Chalmers JD, Chang AB, Chotirmall SH, Dhar R, McShane PJ. Bronchiectasis. *Nat Rev Dis Primers*. 2018 Nov 15;4(1):1-18.
6. Bhattacharjee B, Roja V, Khurana A. Homoeopathic Medicine *Arsenicum album*, the prophylactic/immune booster in COVID-19 pandemic. *Indian Journal of Research in Homoeopathy* [Internet]. 2021 Sep 29 [cited 2024 May 13];15(3). Available from: <https://www.ijrh.org/journal/vol15/iss3/6>
7. *Arsenicum Album - Homoeopathic Materia Medica - By William BOERICKE* [Internet]. [cited 2024 May 13]. Available from: <http://homeoint.org/books/boericmm/a/ars.htm>
8. S Hahnemann, *The Chronic Diseases (Theoretical Part), their Peculiar Nature And Their Homoeopathic Cure*: p 29-30.
9. Samuel Hahnemann, *Organon of Medicine*, fifth and sixth edition, Aphorism 7, p - 118.

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