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A CASE OF DIFFUSE CYSTIC LUNG DISEASE IN A PATIENT WITH COVID 19

General Medicine

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ABSTRACT

SARS COV-2 is known to present with variety of CT findings including Typically of Bilateral peripheral patchy ground glassing in lower lobes and posterior portions with or without consolidation, superimposed interlobular septal thickening causing Crazy Paving pattern are seen. Vascular enlargement ,air bronchograms and halo signs have also been described. Here we report a rare cause of SARS-COV2 Infection with diffuse cystic involvement of bilateral lung fields.

KEYWORDS

INTRODUCTION-

The diffuse cystic lung disease are group of lung disorder characterized by presence of multiple or irregular spherical parenchymal lucencies bordered by thin wall and having a well defined interface with normal lung.The underlying mechanism of cyst formation may be inflammatory , infiltrative or infective process resulting in displacement,destruction or replacement of alveolar septa,distal airway and small vessels.The differential diagnosis includes Pulmonary Langherhans cell histiocytosis, lymphangioleiomyomatosis, lymphocytic interstitial pneumonia and follicular bronchitis.While there are few reports of COVID 19 presenting with diffuse cystic lung involvement.

- **CASE REPORT-**We report a case of 54 year old male with hypothyroidism working as carpenter and passive smoker ,who presented to us at fever clinic with complaints of fatigability while climbing stairs since last 20 days along with low grade fever ,running nose,shortness of breath and dry cough since last 2 days. On evaluation he recorded a body temperature of 97.2 Fahrenheit with a respiratory rate of 24 /min,and Blood Oxygen Saturation of 88% on room air and 94% on o2 at 6litre/min,other vital parameters were normal.Respiratory examination revealed extensive pan inspiratory velcro crepitations on auscultation along the lower lung fields bilaterally with an otherwise normal upper respiratory tract.Other systemic examination was unremarkable. He was admitted under the Department of General Medicine in a dedicated Covid Intensive Care Facility as a case of SARI (Severe Acute Respiratory Illness)ICMR (Indian Council Medical Research) Category 4,with a clinical suspicion of COVID induced Pneumonia.All relevant investigations were carried out.He tested positive for SARS -COV-2 in his Nasopharyngeal and Oropharyngeal Swabs by RTPCR.Arterial blood gas revealed hypoxemic respiratory failure and blood investigations suggested thrombocytosis, transaminitis,with high ESR (Erythrocyte Sedimentation Rate) ,C-reactive protein and Lactate Dehydrogenase(LDH) ,Ferritin and Elevated d d-dimer.A High resolution CT scans of chest Ground Glassing Opacities with Cystic lesion without in particular pattern of distribution.He was stabilized on Supplemental oxygen via plain oxygen mask and medications as per standard institutional protocol including ceftriaxone,methyl prednisolone and low molecular weight heparin.

- In view of worsening respiratory status NIV (Non Invasive Mechanical Ventilation) was applied on day 4 of illness.In view of high inflammatory markers and worsening p/f ratio Inj Tocillizumab (560mg -8 mg/kg) was given.Inj methylprednisolone was W/H Post tocilizumab for 48 hrs.Methyl prednisolone was restarted after 48 hrs .Inflammatory markers including Crp,Ferritin and Ldh were repeated on day 6 of illness which were in reducing trend .Oral steroids in form of prednisolone 20 mg was started .Patient was kept on intermittent Bipap and Hfnc support from day 6 to day 10 of illness with improving inflammatory markers.On subsequent days o2 requirement decreased but patient had c/o of dyspnea on exertion despite decreased o2 requirement and improving inflammatory markers and coagulation profile.Repeat Ct was done on day 23 of illness which showed ground glassing along with repeat ct was done on 23 rd day from illness as patient was having dyspnea on exertion despite weaning o2 support which showed multiple well defined cyst varying in size seen diffusely distributed in bilateral lung field,diffuse ground glass opacities noted in b/l lung fields,multiple lymph node enlargement seen in b/l hilar region,minimal pneumomediastinum is noted.Room trial was given on day 26 of illness and thereafter on room air .Patient tested negative for RT PCR on day 30 of illness and was discharged there after.

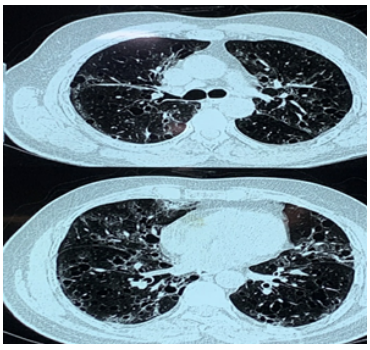
Lab Ix	D 1	D3 (D5:Tocilizumab)	D 7	D 12	D17	D 23	D 30
Hb	13.1	13.5	12.2	13.8	15.1	14.4	14.3
WBC	6000	9200	12,800	11,300	6750	6910	6520
Platelets	1.83	2.88	6.93	8.02	2.26	1.71	1.75
NLR	4.22	12.57				2.78	4.7
SGPT		51	276	104	77	123	66
SGOT		87	119	22	28	51	32
CRP	91.9	270	41.22	2.44	0.34	1.27	<0.6
ESR		77		28			3
Ferritin		961	1515	898	778	626	396
D-dimer		0.62	1.01	1.40	2.29	1.30	1.41
LDH		424	527	288	300	280	251
ProCalcitonin		0.11			0.02		0.02

RT- PCR (NT-OP) POSITIVE
TSH : 3.96 mIU/L
S. Ca: 8.5 mg/dl
HIV /HbsAg / HCV : non reactive
S.ACE : 330-> 80
ANA by IIF : 1:80 (negative)
IL-6: 67.7-> 155.8

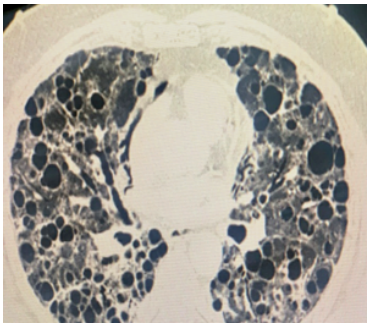
Alpha 1 antitrypsin level : 1.65 gm/l (0.9-2)
Expert P/S : no nay morphological abnormality seen in WBC series

Arterial blood gas analysis:
Hypoxaemic respiratory failure
P/F <150 (on NRBM 15 lit/min)

USG Abdomen- Liver and Spleen
Echo texture Normal
USG NECK-NO LYMPH NODE ENLARGEMENT



Day 1



Day 23
Findings on ct chest
Round,uneven sized,diffusely distributed cystic lesions
Pneumo-mediastinum
Ground glassing
Multiple,uneven,diffuse cysts

DISCUSSION-

Diffuse cystic lung disease can be caused by neoplastic,genetic or infectious etiology.It can be associated with smoking,lympho proliferative disorder,interstitial lung disease, or could be DLCD mimicks.2 case report of COVID patients with cystic features were documented by Kefu Liu. The underlying etiology in 1st case being ischaemic parenchymal damage,lung fibrosis and in 2nd case use of mechanical ventilation. Our patient was kept on non-invasive mechanical ventilation on day 4 of symptom onset but the initial Ct chest showed cystic lesion was taken on day 1 of illness. Pneumocystis occurs in immunocompromised patients such as HIV infected individuals with cd4 < 200cells/mm3. Usually manifest with bilateral ground glass attenuation and reticulation and interlobular septal thickening causing crazy paving pattern but it can present with predominant DLCD pattern .Paracoccidiodomycosis acquired by inhalation of fungal particles.Mucocutaneous lesions and lymph node enlargement are common findings.CT findings include reticular opacities,consolidations and are of reversed halo sign but can present with cystic pattern.As patient was given immunomodulators(TOCILIZUMAB) patient was immune suppressed considering the infective etiology ahead of other cystic lung disease.Pulmonary Langerhans cell Histiocytosis can be the possible etiology.It remains controversial whether PLCH is a polyclonal neoplastic or inflammatory disease secondary to passive smoking.Cyst are centrilobular and peribronchiolar in distribution with 1-10 mm in diameter and are irregularly marginated predominantly in upper and middle lobe with sparing of sub pleural angle,in later stages not following any particular pattern of distribution. As patient is a passive smoker and the cysts are bizarre in shaped PLCH can be a underlying etiology.Lymphocytic Interstitial pneumonia (LIP) a rare disorder with diffuse involvement of the lung parenchyma by reactive lymphoid tissues.Usually affects female between ages of 40-70.The etiology being idiopathic or secondary to Sjogren's syndrome, rheumatoid arthritis,SLE or human immunodeficiency virus infection.The cyst are randomly distributed with ground glassing measuring < 30 mm in diameter and very few in nature.Here the cyst are randomly distributed with ground glassing.ANA by if pattern turned out to be negative ruling out autoimmune association and rheumatoid factor was also negative.Cavitary pulmonary metastasis occurs in tumor of epithelial origin,but here patient having no grade b symptoms and no lymphadenopathy.Lymphangioleiomyomatosis is a low grade neoplasm that affects women of reproductive age with cyst being diffusely distributed,regular ,thin walled measuring 2-10 mm in diameter.Alpha 1 antitrypsin deficiency a hereditary condition resulting in serious lung(Emphysematous changes) and liver disease usually manifest in early childhood. Here the father having h/o of emphysema ,alpha antitrypsin levels were sent which were within normal range.Birt Hogg Dube syndrome is an autosomal dominant disease with multiple,thin walled,round well defined with diameter of 2 to 78 mm in diameter.

CONCLUSION-

We report a case of diffuse cystic lung disease in a patient of COVID 19.COVID 19 Pneumonia are less likely to present with diffuse cystic findings involvement in CT findings.CT findings are suggestive of Langerhans cell histiocytosis without any strong prior clinical clues and needs to be further investigated.Immunosuppressive therapy in COVID treatment should be judiciously used in view of underlying lung pathology.The association between COVID Pneumonia and Diffuse cystic lung involvement needs to proven by picking more cases and reporting them.

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