Case Report

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Unusually large sized bronchial cast/mucus plug after extubation leading to whole lung collapse-consolidation: a rare case report

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ABSTRACT

A critically ill patient of enteric encephalopathy with tetanus was hospitalized in a tertiary care ICU and intubated, put on ventilator. Patient had a whole lung collapse-consolidation developed just after extubation and noticed on physical examination and roentgenogram. After extensive chest physiotherapy a long and thick bronchial cast was removed and chest improved markedly thereafter.

Keywords: Bronchial cast/mucus plug, Bronchoscopy, Chest physiotherapy, Post-extubation collapse, Spasmodic episodes

INTRODUCTION

Oral intubation has been a common practice in ICU set up for better management of critically sick altered sensorium patients.

With improvement of patient, intensivist has to decide for extubation. Thorough suction before extubation is a common and unavoidable practice followed by chest physiotherapy. The case discussed here had a collapse-consolidation of whole lung caused by a big bronchial cast noticed after extubation.¹

CASE REPORT

A 20 years old boy presented at an outside hospital with fever with vomiting since 20 days and drowsiness since morning. He had previously taken treatment for fever at several local centres without relief. There he had an episode of generalized seizure and widal was positive

(titre 1:320) with thrombocytopenia (APC 54000/cumm). He was emergently referred for a tertiary level care.

O/E - Patient was drowsy (GCS-E2M4V1). Rest of the neurological examination was normal. He had a BP of 97/76 mmHg,

Pulse - 72/min, RR - 23/min, SpO2 - 97% on nasal prongs, temperature 99°F. Lab investigation revealed mildly elevated liver enzymes;

TLC - 3200/cumm (Polys - 71%) Hb - 10.4 g/dl, APC - 0.65 lac/cumm; ABG, Electrolytes, RFT, TFT were normal; ECG - sinus rhythm; USG - minimal right sided pleural fluid; 2D Echo – LVEF <50%; blood & urine C/S reported sterile after 72 hours of incubation. CXR was bilaterally clear. Widal was +ve (titre 1:320).

APACHE 2 score was 8 in first 24 hours of admission. A diagnosis of enteric encephalopathy was made. Patient had one episode of GTCS soon after admission and he

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was loaded with phenytoin. He again had similar seizures and other antiepileptics were added. He was given ceftriaxone, levofloxacin for tropical fever syndrome. He was also given artesunate since salmonella was not grown on C/S and to give benefit of doubt because of thrombocytopenia. He maintained vitals with adequate urine output and BP on minimal noradrenalin support. By next afternoon, his GCS improved to 15. But he had 1 more episode of GTCS needing a reviewal of antiepileptic therapy. A plane CT head was normal. Same night he had a generalized spasm of whole body with clenching of teeth (risus type face), wide opened stare and frothy secretions from mouth. Oxygen saturation dropped to 58%. Airway was immediately controlled and patient was put on ventilator. No clonic seizures were observed. A tentative diagnosis of associated tetanus was considered.

Next day, ABG was good and CXR was bilaterally clear. Ventilator was removed and patient was put on T piece. GCS was 9 (E2M6V1). Patient had few more generalized spasms (including opisthotonus) with agitation and wide opened stare and breath holding spell while on T piece. A possibility of tetanus was considered. CSF analysis was normal. Patient was given tetanus immunoglobulin 1000IU and metronidazole. CXR was clear throughout this period (Figure 1).



Figure 1: Pre extubation X-ray.

After 48 hrs had passed since last spasmodic episode and improval in GCS to 15, extubation was planned. In sitting position, after suctioning patient was extubated. But he continued to have tonic spasms on physical stimulation, therefore aggressive chest physiotherapy was not possible.

After few hours his saturation fell to less than 75% and developed high grade fever with tachypnea and hypotension (74/40 mmHg). Decreased movement on right side of chest with a dull note & decreased air entry was noted. Patient responded to non-rebreathing mask with improvement in spo2 to 92%, RR settled. BP recovered by fluid boluses. Patient was conscious and cooperative throughout. Chest X-ray (Figure 2) showed white homogenous opacity covering whole of right lung with some evidence of right sided mediastinal shift. Bronchoscopy was planned.



Figure 2: Post extubation X-ray.

However, chest physiotherapy was continued and patient was encouraged to cough deeply. After a cough bout a >15 cm long & >2.5 cm thick structure appearing like bronchial cast was coughed out by the patient en masse (as shown in the Figure 4 and 5). Patient's saturation improved immediately to 98% on high flow. A repeat CXR 30 min after this plug removal (Figure 3) showed clearing of upper and middle zone and marked decrease in density in lower zone on right side. Further physiotherapy and postural drainage was encouraged. Subsequently he maintained SpO2 100% on ultimate clearing of right chest both clinically and radiologically and nasal prongs were removed.



Figure 3: X-ray 30 min after removal of bronchial cast.



Figure 4: Bronchial cast (>15 cm long; >2.5 cm thick) first view.



Figure 5: Bronchial cast (>15 cm long; >2.5 cm thick) second view.

DISCUSSION

The bronchial cast is a cast of bronchial tree formed of thick inspissated mucus and may be coughed out by the patient. The etiology of bronchial cast usually associated with disease involving mucous hypersecretion like pneumonia, diphtheria, tuberculosis, asthma, chronic bronchitis, inhalation of foreign body, allergic bronchopulmonary aspergillosis, bronchiectasis, cystic fibrosis.

There is organization of mucous in shape of tracheobronchial tree. Plastic bronchitis/fibrinous bronchitis/pseudomembranous bronchitis is a rare condition characterized by formation and expectoration of long cast of bronchial lumen which is idiopathic, when no other cause is found. Management of cast in addition to treatment of underlying etiology is hydration, chest physiotherapy, postural drainage and bronchoscopic removal.

Though patient never showed dyspnea or displayed copious/ viscid sputum on T-piece for 4 days, he developed cast post-extubation causing tachypnea and desaturation. Preextubation optimum suctioning was

done, but because of severe spasm episodes patient was not stimulated after ET removal which may have predisposed him for cast induced collapse/consolidation.

So, chest physiotherapy with postural drainage should be given due consideration by the intensivist, even with patients not showing increased secretions during intubation period. The case is being reported because of unusually large size of bronchial cast leading to right sided lung collapse. Histopathological examination showed cast had inflammatory cells and was fibrinous.

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REFERENCES

- 1. Kao NL, Richmond GW. Cough productive of casts. Ann Allergy Asthma Immunol. 1996;76:231-3.
- Asai T, Koga K, Vaughan RS. Respiratory complications associated with tracheal intubation and extubation. Br J Anaesthesia. 1998;80:767-75.
- 3. Studer SM, Terry PB. Images in clinical medicine. Bronchial cast. N Engl J Med. 2002;346:981.
- 4. Vaughen RS. Extubation: yesterday and today. Anaesthesia. 2003;58:945-50.
- 5. Schmitz J, Schatz J, Kirsten D. Plastic bronchitis. Pnuemologie. 2004 Jun;58(6):443-8.
- 6. Rassam S, Sandby Thomas M, Vaughan RS, Hall JE. Airway management before, during and after extubation: a survey of practice in United Kingdom and Ireland. Anaesthesia. 2005;60:995-1001.
- 7. Scales K, Pilsworth J. A practical guide to extubation. Nurs Stand. 2007;22(2):44-8.

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