Pneumonia caused by Bacillus Anthracis Secondary to Gastrointestinal Anthrax: A Case Report

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Introduction and purpose

- Bacillus anthracis, an aerobic, non-motile, gram-positive bacillus with central spores, causes anthrax, a zoonotic illness. Herbivores are mostly infected by the spores, which can survive in the soil for years.

- Humans can contract anthrax through coming into contact with infected animals or their products.[1,2] The clinical picture of human anthrax differs depending on how the organism enters the body.

- If not treated promptly, the condition might be asymptomatic or proceed to sepsis, which can lead to death.

- Anthrax has three clinical forms: cutaneous, gastrointestinal (GI), and inhalational.

- About 95% of human anthrax is in cutaneous form.

- The respiratory form of anthrax is the most lethal and rare type of the disease, with intricate and peculiar symptoms.[3,4]

Case report

- With a history of sore throat and worsening dysphagia, an 87-year-old male patient was hospitalized to Mogadishu Somali Turkey Recep Tayyip Erdogan research and training Hospital.

- Except for diabetes mellitus over the previous two years, he had no recognizeddiseases,he was residing in a rural location in no rthern Somalia, where he kept some sheeps and camels.

- He was initially hospitalized to İnternal medicine as a patient with bronchopneumonia, as seen by a chest CT scan (Figure 1), but as his condition deteriorated at the next day, he was transferred to the critical care unit.

- Also, Chest CT shows Esophagus is dilated and filled with fluid (*Figure 1)* and General surgery was consulted for Upper GI endoscopy but it was not done as it became difficult as was intubated.

- Initial vital signs at day of admission:
Body temperature 37.5C; pulse rate 111/min; blood pressure 90/47 mmHg; respiratory rate 30/min with SPO2 of 77%.

- On admission to the ICU, physical examination revealed the following: Body temperature 36.5C; pulse rate 160/min; blood pressure 98/61 mmHg; respiratory rate 30/min with SPO2 of 82%.

Laboratory results were as follows:

White blood cell (WBC) count 12.47 109 /l (88.0% neutrophils, 6.5 lymphocytes); hemoglobin 12.4g/dl; platelet (PLT) count 195 000/ul; prothrombin time (PT) 17.1s; partial thromboplastin time (PTT) 61.7 s; INR 1.31; D-dimer 2 mg/ml (normal: 0—0.5); erythrocyte sedimentation rate (ESR) 32/ hr; C-reactive protein (CRP) 47mg/dl (normal: 0—10 mg/ dl); blood creatinine 0,52 mg/dl; urea 48 mg/dl; glucose 261 g/dl.

COVID19 PCR Negative

- Chest x ray (Figure2) was repeated 4 days after icu Addmission:Bronchopneumonia in both lungs more significant in right lung ,Figure

- Abdominal ultrasonography (USG): No pathology.

- Echocardiography: No pericardial effusion/Novegetation.Normal left ventricular systolic function (EF: 63%)

- Despite the supportive treatment, intravenous antimicrobial therapy with ampicillinsulbactam was empirically started initially.

- After ICU transfer, it was switched to imipenem 4x500mg and moxifloxacin 1x 400mg with noradrenaline, his condition continued worsening and the patient intubated.

- Blood cultures and tracheal aspirates were taken.

Bacillus anthracis was found in his tracheal aspirate culture the next day, Catalasepositive,nonmobile, Gram positive spored bacillus (figure 3), Blood agar colonies white, opac, non-hemolytic colonies (Figure 5).

No bacterium was found in his blood culture.

- Following a confirmed diagnosis of anthrax pneumonia, intravenous ciprofloxacin (800 mg/day). antimicrobial therapy was added and moxifloxacin stopped .

- Patinet has been also transferred to isolation room in the ICU.

- After a week of therapy, the patient passed away.

- Ciprofloxacin prophylaxis dose was recommended by infectious diseases department .

- There have been no confirmed cases of sick family members or hospital employees in the last two months.

- Due to patient's family's dissatisfaction, an autopsy was not done.

- The organism that was isolated from the secretion of the lungs made us to consider diagnosis of anthrax.

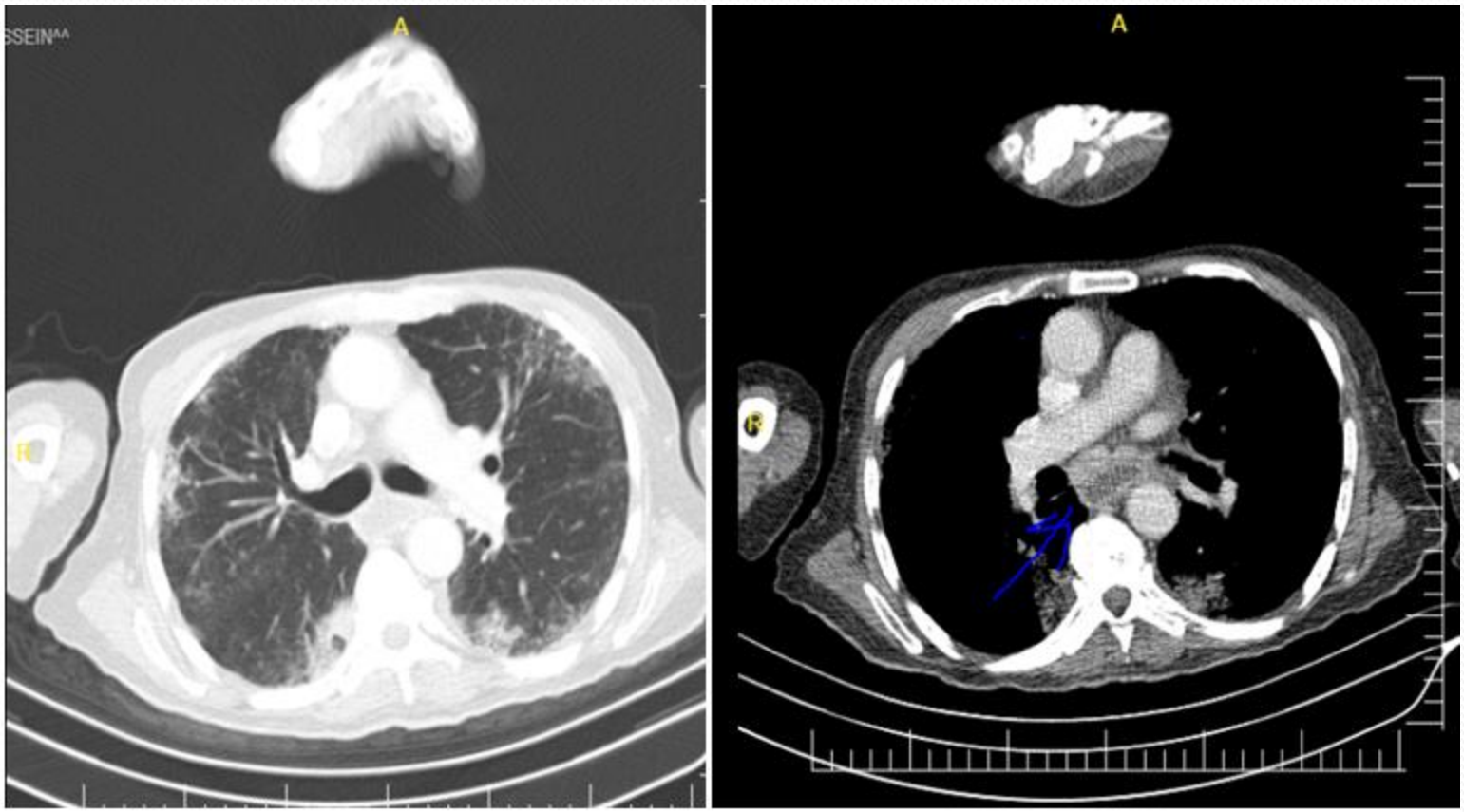

Figure 1

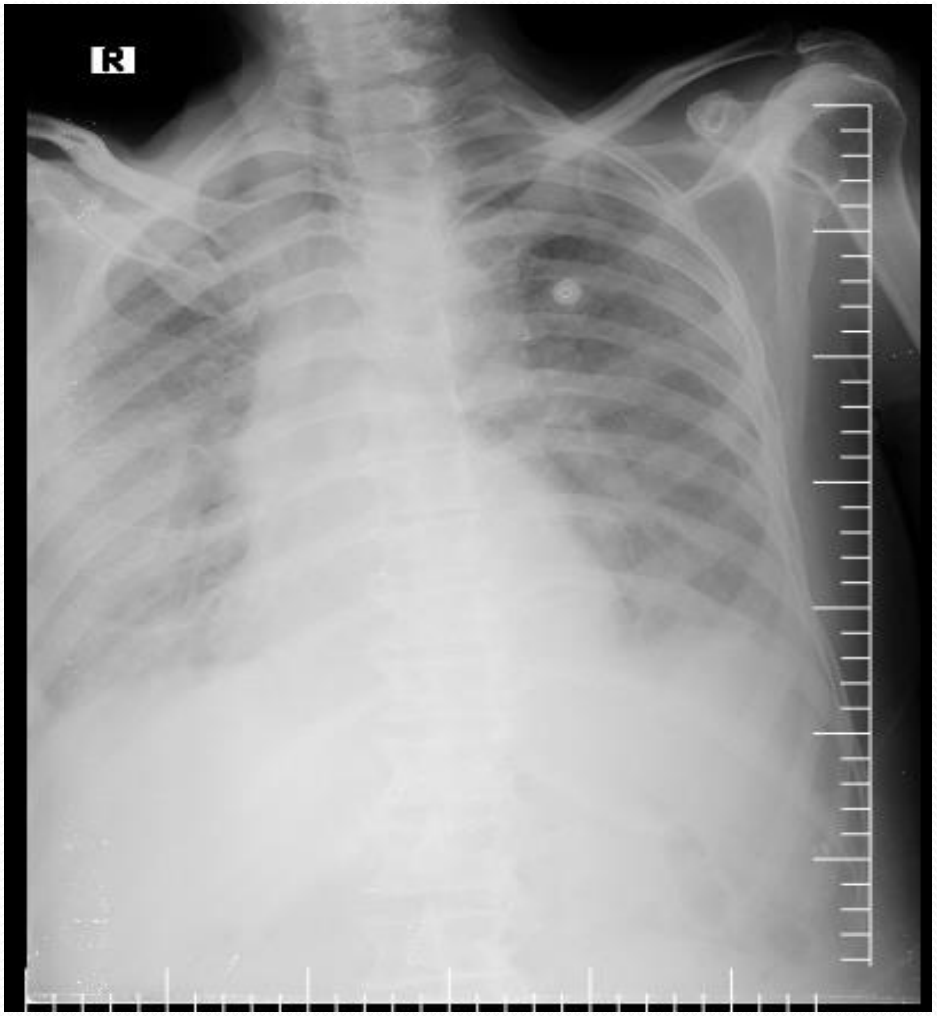

Figure 2.

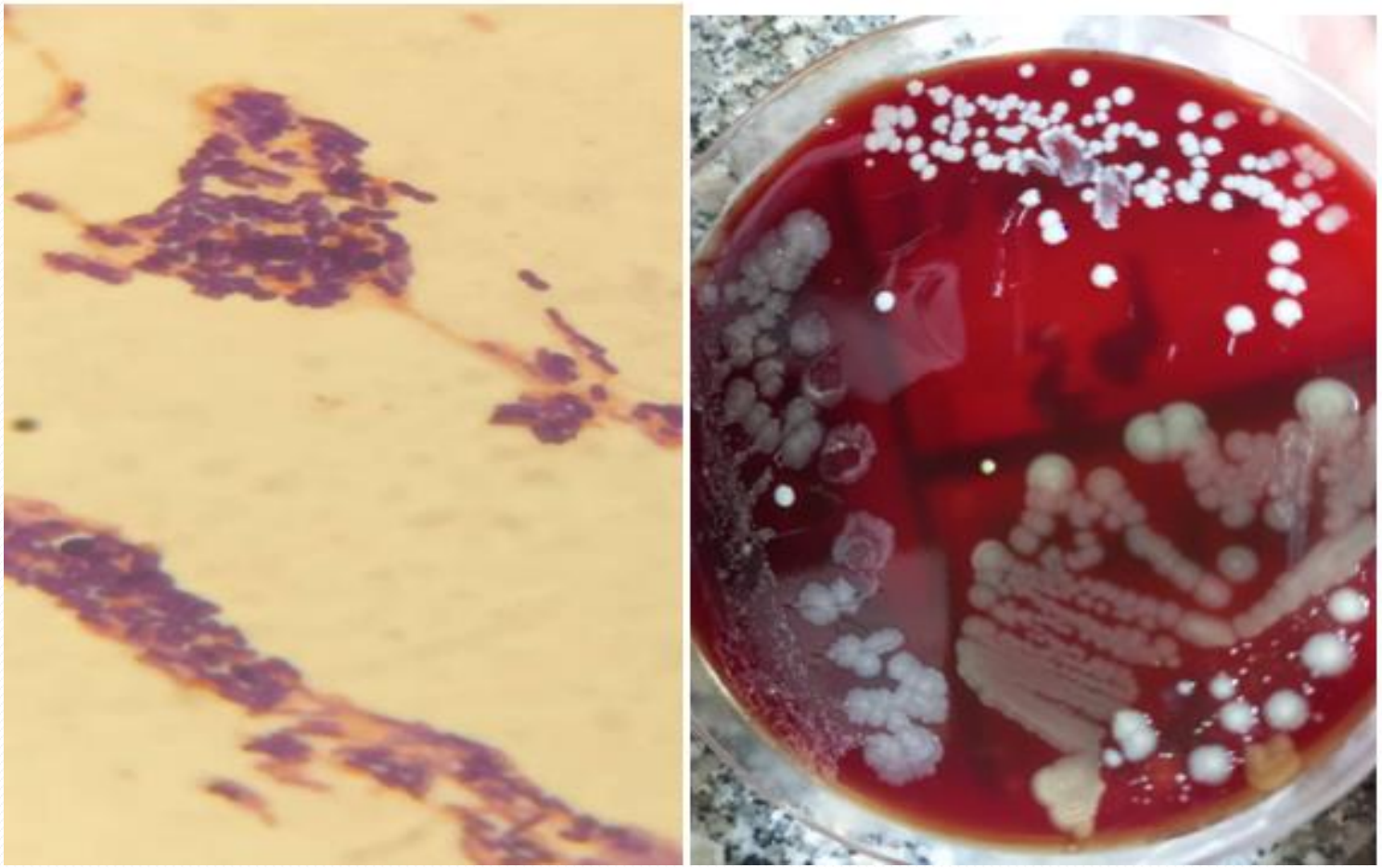

Figure 3

Our case significant point

Inhalational anthrax transmission is thought to be a biological weapon of spore particles, but in our case, inhalational anthrax was transmitted without Known biotrorism exposure and instead through animal interaction.

References:

1.Lucey D. Bacillus anthracis (Anthrax). In: Mandell GL, Bennett JE, Dolin R, editors. Principles and Practice of Infectious Diseases. Philadelphia: Elsevier-Churchill Livingstone; 2005. p. 2485—93.
2.Sirisanthana T, Brown AE. Anthrax of the gastrointestinal tract. Emerg Infect Dis 2002;8:649—51
3.Lucy D. Bacillus anthracis. In: Mandell GL, Bennet JE, Dolin R, editors. Principle and practice of infectious disease. Philadelphia: Elsevier-churcill livingstone; 2015. p. 2465–93.
4.Cymet Tyler C, Kerkvliet G, Tan Judy H, Gradon J. Symptoms associated with anthrax exposure: suspected “aborted” anthrax. J Am Osteopath Assoc. 2002;102:41–3.
5.Anthony Kolbe, Yuen Marion G, Doyle Bridget K. A case of human cutaneous anthrax. Med J Aust. 2006;185(5):281.
6.Lucey D. Bacillus anthracis (Anthrax). In: Mandell GL, Bennett JE, Dolin R, editors. Principles and Practice of Infectious Diseases. Philadelphia: Elsevier-Churchill Livingstone; 2005. p. 2485—93.
7.Doganay M. Bacillus anthracis ve diğer bacillus türleri. In: Willke Topcu A, Soyletir G, Doganay M, editors. İnfeksiyon Hastalıkları.
8.Stefan Riedel. Biological warfare and bioterrorism: a historical review. Proc (Bayl Univ Med Cent). 2004;17(4):400–6.
9.Pile JC, Malone JD, Eitzen EM, Friedlandes AM. Anthrax as a potential biological warefare agent. Arch Intern Med. 1998;158:429–45.
10. Jerningan JA, Stephans DS, Ashford DA, Omenaca C, Topiel MS, Galbrath M. Bioterrorism related inhalational anthrax: the first 10 case reported in the United States. Emerg Infect Dis. 2001;7(6):933–44.

Thank you