

Salty Bronchorrhea: The Forgotten Semiology of Bronchioloalveolar Adenocarcinomas

Broncorreia Salgada: A Semiologia Esquecida dos Adenocarcinomas Bronquioloalveolares

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We report the case of an 85-year-old Caucasian man, a former smoker with an 80 pack-year history and no other inhalation exposures, with a medical history of hypertension, heart failure, and obstructive sleep apnea treated with continuous positive airway pressure (CPAP). He was electively admitted for bronchoscopy due to persistent right upper lobe (RUL) pneumonia with no clinical or

radiological improvement after two cycles of antibiotics. However, due to severe respiratory failure, he was deemed unfit for the procedure and was hospitalized.

During admission, the patient reported a two-month history of dyspnea, abundant productive cough with milky and salty sputum, anorexia, weight loss, and wheezing. On physical examination, he

was hemodynamically stable, eupneic at rest, with a peripheral oxygen saturation of 94% on 40% FiO₂, afebrile, and with decreased vesicular breath sounds at the right apex on pulmonary auscultation. Laboratory tests showed no inflammatory markers, and serologies were negative. Chest X-ray revealed an alveolar-pattern opacity in the upper region of the right hemithorax, limited inferiorly by the minor fissure and sparing the most peripheral area of the RUL. Chest computed tomography showed consolidation of a large part of the RUL, limited by the major fissure, with air bronchograms and foci of consolidation/ground-glass opacities in the other lung lobes, suggestive of lobar pneumonia with endobronchial dissemination. Bronchoscopy revealed no endobronchial abnormalities. Microbiology results were negative, and cytology of the bronchoalveolar lavage confirmed a lung adenocarcinoma. Subsequent biopsies confirmed the diagnosis of PD-L1-negative adenocarcinoma.

The patient's clinical condition deteriorated, precluding systemic therapy. He received optimal supportive care but died approximately three months after diagnosis.

The term bronchioloalveolar carcinoma (BAC) was formalized in 1960 by Averill Liebow, although it was first described by Pierre Malassez in 1876.^{1,2} BAC was one of the four subtypes of lung adenocarcinoma, along with acinar, mucinous, and papillary subtypes. Its name did not reflect the origin of the neoplastic cells but rather the tumor's behavior and growth pattern. It displayed a characteristic lepidic growth pattern, where tumor cells utilized the airway architecture as a structural scaffold.³ This ambiguity was one of the reasons the term "bronchioloalveolar carcinoma" was abandoned in February 2011, when the European Respiratory Society, American Thoracic Society, and International Association for the Study of Lung Cancer proposed a new classification for lung adenocarcinomas. This classification includes adenocarcinoma *in situ*, minimally invasive adenocarcinoma, and invasive adenocarcinoma (encompassing acinar, papillary, solid, and lepidic variants), better reflecting each entity's clinical behavior, treatment, and prognosis.⁴

Bronchorrhea was one of the hallmark symptoms of BAC, with an incidence ranging from 5% to 10%.^{1,2} A salty taste was another characteristic of BAC,⁵ resulting from increased chloride secretion by the epithelium and plasma leakage into the airways, producing mucus with an osmolality similar to plasma.⁶⁻⁹ Salty bronchorrhea was typically described in advanced stages of the disease and indicated extensive pulmonary involvement.^{3,7}

During the medical history-taking, the patient emphasized the abundant amount of salty sputum. Based on this description, lung neoplasia, specifically bronchioloalveolar carcinoma, was

considered the primary diagnostic hypothesis. In the case described, salty bronchorrhea occurred in the late stage of the disease, consistent with what is reported in the literature.

With the discontinuation of the BAC term, advancements in medicine, and improved access to healthcare, lung cancer is now diagnosed earlier, and available therapies have delayed disease progression. This likely explains why salty bronchorrhea is no longer a frequent or initially reported symptom. A thorough clinical history remains essential in guiding the diagnostic process, often helping to avoid unnecessary complementary tests or treatments.

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AC: First draft and literature review. Critical and first review of the work.

AF: Critical and final review of the work.

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