

Acute stress disorder and asthma: where would it be in the emergency room?

Arq Asma Alerg Imunol. 2023;7(2):236-7.
<http://dx.doi.org/10.5935/2526-5393.20230034-en>

Dear Editor,

Asthma, a heterogeneous disease normally characterized by chronic airway inflammation, involves a history of respiratory symptoms, such as wheezing, chest tightness, and cough, which vary in intensity and are associated with some degree of expiratory airflow limitation. Patients with infrequent symptoms may experience a severe or even fatal exacerbation that is often unpredictable and could be triggered by viral infection, allergen exposure, air pollution, or stress.¹

Acute stress disorder (ASD) is a distinct condition that can increase antigen-specific cellular immune response and is often associated with acute asthma exacerbation. ASD can be triggered by physical or psychological stressors.²

To be diagnosed with ASD, individuals must have been exposed to a serious traumatic event, described as “experiencing or witnessing situations involving death, risk of death, or serious damage to their own physical integrity or that of others”, ie, this experience involves intense fear, impotence, or horror.³

During more severe asthma attacks, the patient may experience anxiety, agitation, diaphoresis, altered brain function, dyspnea, and cyanosis. Thus, in the clinical history it can be particularly difficult to determine which specific situation triggered the ASD and panic attack.

Patients and clinicians often interpret “mild asthma” as having no risk and no need for control treatment. However, over 30% of asthma deaths occur in patients with infrequent symptoms. Therefore, due to the risk of severe exacerbation, it may be best to avoid this term.¹

There is evidence that ASD and anxiety are associated with elevated levels of exhaled nitric oxide, which is used as a marker of airway inflammation in asthma.⁴ During an attack, the patient may suffer dyspnea and an altered level of consciousness, difficulty speaking, and even vomiting, making it difficult to obtain a clinical history, thus confusing

panic attacks with asthma.¹ Stress is often associated with asthma exacerbation. An individual’s perception usually causes activation of the hypothalamic-pituitary-adrenal axis and subsequent release of glucocorticoids and catecholamines. The effect of these hormones on asthma is complex, since stress has been shown to both increase and attenuate symptoms.^{1,2} The fact that different types of stressors (physical vs psychological) can elicit different biochemical and physiological responses may partially explain some differences in atopic disease. The duration of a stressor can also affect immune response. Although a cell-mediated immune response can be increased in ASD, the same stressor, when chronic, can suppress it.²

Vocal cord dysfunction, ie, inappropriate adduction (closing) during inspiration and sometimes during expiration, can mimic asthma and is thus a confounding factor. Vocal cord dysfunction should be evaluated during an ASD episode, since it has been associated with conversion disorder.⁵ It can be diagnosed through direct laryngoscopy by visualizing paradoxical movement in the vocal cords, which cannot be fully explained as a physical disorder. However, certain triggers, such as gastroesophageal reflux or chemical irritants, should be ruled out.

In asthma, psychological stress has genetic and epigenetic repercussions in that it influences β 2-adrenergic and glucocorticoid receptors, decreasing response to these drugs. Changes in respiratory function are also involved, including worsening obstruction and inflammation, which can be identified through a decrease in forced expiratory volume in 1 second and an increase in exhaled inflammatory gases in allergic asthma.⁶ However, it is important to note that asthma is not primarily a psychosomatic illness.¹

Decades ago, while I was interning at the Division of Allergy and Clinical Immunology of the University of South Florida/Veterans Administration Hospital (Tampa, FL, USA), Korean War veterans who were asymptomatic for asthma reported “severe attacks” during combat or on high-risk missions. The question had not yet been formulated: “Was it asthma or vocal cord dysfunction due to ASD?” This striking example could be transferred our current context.

The clinical presentation of vocal cord dysfunction varies widely, and may include laryngeal stridor, tightness in the throat, dyspnea, and dysphonia associated with various triggers, including ASD. It does not respond to conventional asthma treatment and is rarely suspected during periods of stress.⁵

When ASD is associated with asthma, long-term benzodiazepine use may be contraindicated, since they could

be iatrogenic.³ Psychiatric evaluation and follow-up are suggested. During the consultation, doctors should “hear, rather than listen, to the patient”, that is, what the patient feels and wants to communicate, regardless of whether or not they have a background in psychiatry.⁷

In difficult-to-control asthma, the purpose of the protocols is to guide physicians; they do not rule out the idea of personalized medicine.⁸

Thus ASD, associated with acute and severe asthma in asymptomatic patients, should not be seen as an “orphan entity”. It warrants more thorough investigation.

References

1. Global Initiative for Asthma. Global Strategy for Asthma Management and prevention. 2022. Available at: www.ginasthma.org.com. Accessed on: 01/07/2023.
2. Sutherland MA, Shome GP, Hulbert LE, Krebs N, Wachtel M, McClone JJ. Acute stress affects the physiology and behavior of allergic mice. *Physiology and Behavior* 2009;(98):281-7.
3. Brunoni AR, Leal OM, Olmos RD. Interconsulta em doenças respiratórias. In: Miguel EC, Gentil V, Gattaz WF (eds.) *Clínica Psiquiátrica*. Barueri: Manole; 2011. p. 666-82.
4. Ritz T, Trueba AF. Airway nitric oxide and psychological processes in asthma and health: a review. *Ann Allergy Asthma Immunol*. 2014;112:302-8.
5. Dunn NM, Katial RK, Hoyte FCL. Vocal cord dysfunction: a review. *Asthma Research and Practice* 2015;(1):1-8.
6. Lira GVA, Pontes da Silva GA, Wandalsen GF, Sarinho ESC. Psychological stress in asthma: repercussions on epigenetics – genetics, immune-responses, and pulmonary function in the pediatric population. *Allergologia et immunopathologia*. 2022;50(2):78-88.
7. Zunta G. Comunicação pessoal, Professor of Psychiatry, University of Texas, Houston, EUA.
8. Giavina-Bianchi P, Aun MV, Bissancioni Agondi R, Kalil J. Difficult-to-control asthma, management through the use of specific protocol. *Clinics*. 2010;65(9):905-18.

No conflicts of interest declared concerning the publication of this letter.

Francisco Machado Vieira

Department of Ocular Allergy, Brazilian Allergy and Immunology Association (ASBAI). Clínica de Alergia e Imunologia, Caxias do Sul, RS, Brazil.