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Hyperventilation Syndrome: why is it so often overlooked?

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ABSTRACT

Hyperventilation syndrome is far more common than generally believed, and thus usually unrecognized. It often produces misleading complaints that include alterations of consciousness, inexplicable sensory and motor sensations, and it is often masked by coexisting somatic symptoms. Confounding the confusion, patients are often unaware of excessive breathing, and subjective "dizziness" is often the presenting complaint, which may lead to syncopal episodes. Obscuring recognition further, symptoms attributed to the panic disorder often overlap with those of hyperventilation. Proper diagnosis of hyperventilation is described by the simple bedside maneuver of forced breathing. This diagnosis must be considered before effective management can occur.

Keywords: Hyperventilation Syndrome; Panic Disorder; Non-Cardiac Chest Pain; Dizziness; Syncope; Pseudo seizures

Introduction

For more than a century, we have encountered a condition—now called the "hyperventilation syndrome"—characterized primarily by breathlessness, "dizziness", often described as a vague sensation of lightheadedness, weakness, numbness and tingling (paresthesias) and chest pain.[1]

These episodes are surprisingly common, occurring with an estimated prevalence in the range of 10% of all general medical patients[2], and approximately 25% of patients complaining primarily of "dizziness" [3]. I have personally encountered them as a central or contributing component of approximately 15% of patients applying for long-term disability.

Most medical caregivers readily recognize acute hyperventilation attacks occurring under acute stress. However, chronic or recurrent hyperventilation problems often are unrecognized probably for a variety of reasons, including the frequent lack of obvious over-breathing, a tendency to focus on one or two complaints that alone are not particularly suggestive of hyperventilation, compounded by absence of discussion of this topic in healthcare schools, and cursory coverage in medical textbooks.

PHYSIOLOGY OF HYPERVENTILATION[4]

How emotional stress can induce an excessive respiratory response is likely rooted in the evolutionary "flight or fight" reaction, wherein, in anticipation of imminent need for increased exertion combined with increased adrenergic drive, rapid respiration results. If increased exertion is not required, however, excessive and inappropriate breathing (hyperventilation) produces hypocapnia, respiratory alkalosis, and a complex array of physiologic changes[3], that include widespread vasoconstriction (importantly to the brain) with increased neurological excitability, and a complex array of somatic symptoms, among which are general weakness, numbness and tingling (sometimes located primarily on one (left side) of the body[5], diminished or loss of consciousness. These changes may even produce bronchoconstriction that may result in audible wheezing, augmenting the sensation of dyspnea as well as simulating or intensifying preexisting asthma[6].Thus, since hyperventilation can complicate asthma, one should consider both asthma and hyperventilation when encountering features of both conditions.

Although these physiologic changes usually develop rapidly upon onset of hyperventilation, they can easily be maintained indefinitely, by nearly imperceptible hyperventilation, such as by taking an occasional deep breath while maintaining a normal respiratory rate. In this setting, caregivers may observe only the subtle, chronic form of hyperventilation without recognizing it, or, upon considering the diagnosis, inappropriately reject it because the expected rapid breathing pattern is not present. Resulting symptoms may include atypical chest pain, chronic fatigue, mild dyspnea, or exercise intolerance. Air hunger is common, hinting the possible presence of hyperventilation.

How these cases should be diagnosed and managed

Such a patient's demeanor may reveal cues in the form of occasional sighs and/or deep breaths together with other possible overt evidence of anxiety. The complaints also include one or more of several manifestations that include dyspnea, dizziness, numbness, and tingling (usually widespread but sometimes most prominent on one side of the body[5], especially the left, which can mimic transient ischemic cerebrovascular attacks), chest pain, dry mouth, hot or cold sensations, weakness, and fainting. If one is faced with any or all these features, hyperventilation should be considered and diagnosed before one considers referring such patients to various specialists such as neurologists or cardiologists.

Acknowledging the possibility of hyperventilation, the clinician should then instruct the patient to breathe as deeply and as rapidly as possible, preferably in the upright sitting position, for at least two or three minutes, or at least until some discomfort appears that includes numbness and tingling and/or a sensation of dizziness. If he/she responds affirmatively when asked if these sensations are similar or identical to any of those accompanying the spells, then the diagnosis is confirmed or strongly suspected. Further confirmation can be accomplished by explanation of the effects of hyperventilation, together with how to control and suppress its symptoms by first triggering it intentionally by rapid breathing and then terminating it with breath holding, maneuvers that should be practiced at home. Relieving symptoms through re-breathing into a paper bag has been suggested, but, in my opinion, is usually not required. The diagnosis is further confirmed if and when subsequent attacks are eliminated by these simple measures. I have noticed, however, that, in cases in which symptoms have been present for a long time, acceptance and control may be difficult, possibly owing to a deeply ingrained pattern of behavior, and in some cases, possibly owing to hoped for disability judgments or secondary gain from an attentive family or friends. Also, for uncertain reasons, the usual chest pain occurring during the attacks may not be reproduced promptly by the rapid breathing maneuver. The cardiac origin of such pain can usually be excluded by careful history taking and, when necessary, appropriate testing. In such cases, breath control and/or simple reassurance may be all that is required to minimize or eliminate pain and reduce superimposed anxiety.

The diagnosis of panic disorder offers a special therapeutic challenge and opportunity: "Panic attacks," according to the criteria listed in the current psychiatric handbook[7], include, among others, the following features: "Trembling or shaking, sensations of shortness of breath or being smothered feeling of choking, chest pain or discomfort, feeling dizzy, unsteady, lightheaded, or faint, chills or hot flashes, and paresthesias (numbness or tingling sensations), chills or hot flashes, and palpitations, and/or accelerated heart rate." Although these manifestations are listed as inherent to the panic disorder itself, they are identical to the typical features already cited for the hyperventilation syndrome. The fear and anxiety that initiate the panic response are often compounded by the unpleasant subjective complaints

caused by the breathing disorder itself. This, in turn, may further increase the fear and rapidity of ventilation, thus creating, in effect, a vicious cycle. By demonstrating the role played by aggravating hyperventilation, the caregiver can interrupt this feedback cycle sufficiently to ameliorate, or even eliminate, the panic response itself. To accomplish this objective, however, this requires recognition that the breathing disorder is a major contributor to the panic state.

Conclusion

A wide variety of patients manifest features that strongly suggest the presence—or contributory role—of hyperventilation, but this diagnosis is seldom considered by either general physicians or various specialists to whom these patients are referred. Thus, provocative testing is seldom, if ever, performed and an accurate diagnosis is never established. Those managing large general medical populations would be well advised to consider this diagnosis far more frequently. Most specialty groups would also benefit from such awareness. The results could be very gratifying to both patients and caregivers alike!

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