

Rostrum

How to diagnose psychogenic and functional breathing disorders in children and adolescents

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Psychogenic and functional breathing disorders are common and affect mostly children and adolescents, resulting in considerable morbidity and contributing significantly to patient and physician cost and frustration. The most common non-organic clinical entities are psychogenic cough, throat clearing tic, sighing dyspnoea, hyperventilation syndrome, and vocal cord dysfunction. Combinations of organic respiratory diseases and psychogenic aspects can coincide. The mainstay of the diagnosis of psychogenic and functional breathing disorders is full and meticulously taken history. A list of possible questions is presented. Furthermore, the value of a thorough physical examination is often underestimated. If a diagnosis cannot be made clear enough by history taking and examination alone, some baseline instrumental diagnostics are meaningful. An interview with an experienced clinical psychologist and a visit at the physiotherapist may add further information in some cases. Criteria, which differentiate psychogenic or functional breathing symptoms from organic ones, include no nocturnal symptoms, mostly no typical trigger factors, symptoms may occur suddenly and even at rest, speaking is possible without problems and there are normal diagnostic results during episodes of symptoms. Intensive efforts should be made to diagnose psychogenic and functional symptoms, because this will reduce or eliminate harm, prevent stigmatization and fixation of symptoms and disease, allow an untroubled life (including sports), and prevent patients from undergoing unnecessary and potentially harmful therapies.

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Complaints about clinical symptoms of the respiratory tract are heard very frequently – on one hand in the context of acute respiratory infections and on the other hand of chronic diseases such as bronchial asthma. In general, any breathing complaint can be accompanied with:

1 Dyspnoea: the feeling of difficult or heavy breathing

2 Sound phenomena: coughing, stridor, vocalizations, etc.

3 Tightness: feelings of tightness in the throat or chest

4 Pain: thoracic pain or painful breathing

5 Fear: panic attacks

Often, patients vaguely say: ‘I cannot get enough air’. However, this may comprise very different symptoms: (i) a blocked nose (e.g., acute common cold or perennial allergic rhinitis); (ii) swelling of the pharynx (e.g., pollen-associated food allergy); (iii) laryngeal edema or stenosis,

(iv) peripheral obstruction with wheezing; (v) pure psychogenic feeling of dyspnoea.

Psychogenic and functional breathing disorders are common and affect mostly children, adolescents, and young adults, resulting in considerable morbidity and contributing significantly to patient and physician cost and frustration (1). The most common non-organic clinical entities are psychogenic cough, throat clearing tic, sighing dyspnoea, hyperventilation syndrome, and vocal cord dysfunction (VCD) (2). Fig. 1 provides a simple classification of organic and psyche-associated breathing disorders. Fig. 2 tries to elucidate the interaction of the three parts 'organic', 'functional', and 'psychological' aspects.

Because the reported symptoms in psychogenic and functional disorders often resemble those of organic diseases (such as bronchial asthma) and there is no single, standardized test of proof, the diagnosis of functional respiratory disorders is sometimes difficult and time consuming (2–5). Moreover, combinations of organic respiratory diseases and psychogenic aspects can coincide (6, 7); a typical example of a vicious circle is illustrated in Fig. 3. Finally, psychogenic/functional breathing disorders can occur in combination (e.g., habitual cough plus throat clearing tic, or psychogenic breathing panic and hyperventilation syndrome).

Psychogenic and functional breathing disorders are often under-diagnosed, with the consequence of unjustified and potentially harmful therapeutic measures being given. A fast and secure diagnosis is mandatory to avoid stigma-

tization and persistence of symptoms and their sequelae. While there is much literature on clinical entities and some on therapeutic options, very little has been published on diagnostic approaches (8).

History

The mainstay of the diagnosis of psychogenic and functional breathing disorders is a full and meticulously taken history. Following, a list of possible questions is presented:

- 'How do you exactly characterize your symptoms?'
(e.g., during inspiration and/or expiration, being out of breath, heavy breathing, dyspnoea, pain, etc.; the wording of patients is often consistent, different from organic complaints and may already allow an assignment)
- 'Can any breath sounds be heard during the episodes?'
(e.g., wheezing, stridor, or no breath sounds at all; can bystanders hear it? Usually, no specific sounds can be heard by the surroundings, except in VCD)
- 'Is there a typical time-point during the day? Circadian rhythm?'
(e.g., daytimes or at night, morning, evening or at any time; usually there is no defined time of the day)
- 'Do you awake at night because of the symptoms?'
(Asking for 'symptoms at night' is not exact enough, because many patients exhibit

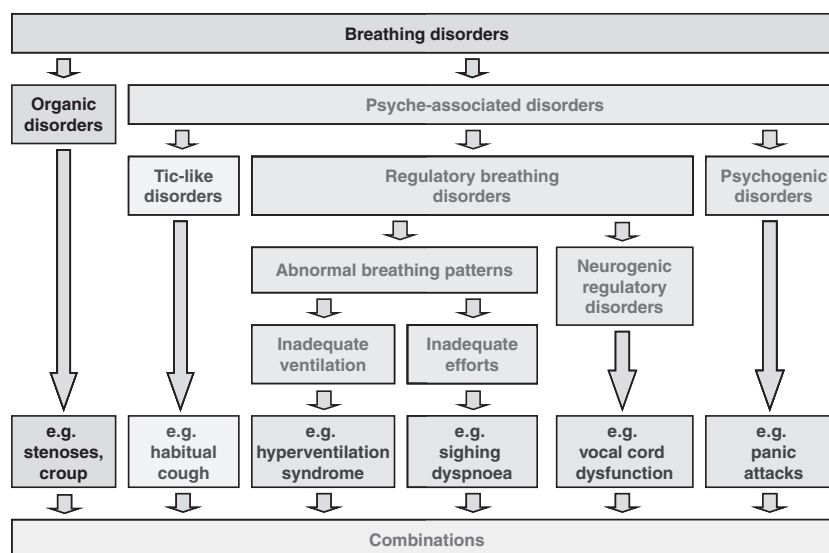


Fig. 1. Broad classification of organic and psyche-associated breathing disorders.

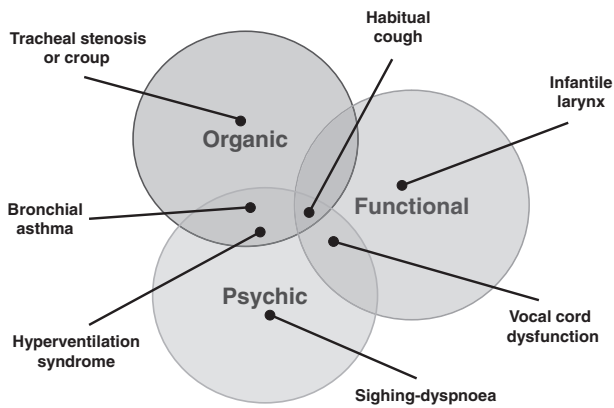


Fig. 2. Interaction of 'organic', 'functional', and 'psychological' aspects in breathing disorders.

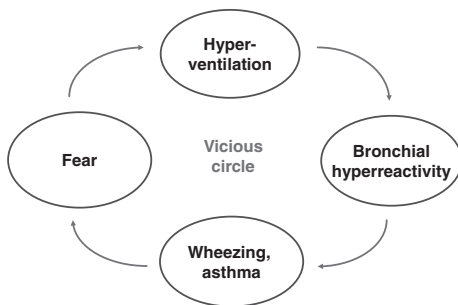


Fig. 3. Typical example of the vicious circle when organic respiratory diseases and psychogenic aspects coincide.

symptoms when lying in bed but still awake, but not during sleep; this question is one of the most important one and allows differentiation to at least bronchial hyperreactivity and asthma, which mostly show nocturnal symptoms)

- 'Did the symptoms start in the context of a respiratory tract infection? Or after any other event?'
(Especially psychogenic cough and throat clearing mostly start with a common cold or bronchitis, then patients lower the threshold to cough and finally they cough without any 'reason'. Other causes include psychological events such as divorce of parents)
- 'What typically acts as a trigger?'
(e.g., physical exercise – although this can occur both with organic and psychogenic or functional disorders; psycho-social stress, etc.; or no typical trigger factors at all)
- 'Do symptoms also occur at rest?'
(e.g., while watching TV; are symptoms absent if patient is distracted?)
- 'Are sport activities possible or limited?'
(e.g., usual sport lessons at school, private sporting activities in sporting associations; sport sometimes possible, sometimes not?)

- 'How long do episodes last?'
(e.g., minimum, maximum duration; average in seconds, minutes or hours; very variable duration?)
- 'How long does it take you to recover?'
(While asthmatic symptoms usually resolve within 10–20 min, psychogenic dyspnoea may disappear within only few minutes)
- 'Can you speak while experiencing the symptoms?'
(e.g., in organic dyspnoea, speaking has to be interrupted to take breath, while this not the case in psychogenic symptoms; it is a common feature in psychogenic stridor to have a normal voice (9))
- 'Do you suffer from the symptoms?'
(e.g., in psychogenic cough, the surrounding (such as teachers, school-mates or family) suffer more than the patients; do the surroundings develop even aggressive feelings?)
- 'Where is the feeling of breathing difficulty localized?'
(e.g., let the patient localize with one finger; roughly, psychogenic dyspnoea is more often located to throat than thorax)
- 'Did you get any pharmacotherapy for your symptoms? Were they effective? To what extent?'
(e.g., antiasthmatic therapy in forms of short-acting beta-agonists or inhaled corticosteroids; usually there is no or only little improvement by drugs, except from the placebo effect strength)
- 'Did you ever have clinical signs such as tingling of lips or fingers?'
(e.g., if hyperventilation is suspected)
- 'Are there any other tics?'
(e.g., blinking or throat clearing tic; often, tic-disorders occur combined, which strengthen a positive diagnosis if reported or observed)
- 'Do parents think they have a healthy or ill child?'
(In most cases parents will state that they have a healthy child – if symptoms are absent at present)

Physical examination

Nowadays, the value of a thorough physical examination is often underestimated and instrumental diagnostics are performed early. However, already the impression of the overall picture (e.g., appearing anxious, lifted shoulders, type of breathing, exertion of auxiliary respiratory muscles, breathing frequency, type of sighing, etc.) can give valuable information for the later diagnosis. Furthermore, inspection of the nose

(impaired nose breathing, enlarged turbinates, mucosal swelling, etc.) and chest auscultation (differences of left and right lung, rales, secretions, etc.) are the basis of any decision for differential diagnoses.

Instrumental diagnostics

Many patients do not need any instrumental diagnostics at all to obtain a well-defined diagnosis. However, if a diagnosis cannot be made clear enough by history taking alone or if one thinks that the patient and their family may be more convinced if negative and normal results are obtained from instrumental diagnostics, some baseline diagnostic measures are meaningful such as body plethysmographic lung function, pulse oximetry (SaO₂ and heart rate), and breathing frequency. These three measures should be performed routinely.

In special cases with a certain suspicion, extended instrumental diagnostics are required: flexible bronchoscopy (e.g., in case of vocal cord dysfunction or to exclude foreign body aspiration), chest-X-ray (e.g., in case of wet cough), physical exercise test (e.g., panic attacks, pure psychogenic symptoms, and exercise-induced vocal cord dysfunction), endoscopy (e.g., if a gastro-esophageal reflux is suspected) blood gas analysis (e.g., for suspected hyperventilation), and a pharyngeal swab (e.g., for suspicion on nasal drip).

However, vascular injection of laryngeal and tracheal mucosa during endoscopy may be misleading, because this may be a consequence of an aggressive barking cough – and not the cause for coughing. An undoubted role for flexible endoscopy of the airways is given for suspicion of functional breathing noises, e.g., floppy arytenoids in older children or adolescents. Only rarely are measures such as CT-scan, NMR-imaging or serological titers of infectious agents necessary.

An unspecific bronchial provocation test with pharmaco-active substances (e.g., methacholine) is generally not of any value, because a positive result may be misleading to the physician, because many children show a positive response to this unspecific provocation without ever having any corresponding clinical symptoms.

Interactive team approach

An interview with an experienced clinical psychologist (e.g., concerning learning history with the symptoms, individual and familiar coping and health beliefs) may be very helpful for further evaluation to ensure the diagnosis – not

only for therapeutic reasons. This is especially true because there may be a smooth transition to conversion disorders in some cases. Some special questionnaires have been proposed for diagnosis, e.g., for hyperventilation (10).

Similarly, a visit at a physiotherapist may add important diagnostic information, for example about subtle dysfunctional breathing patterns. At least, these two diagnostic options should be announced at the first doctor's visit – not waiting until the patient gets the impression that the physician 'ran out of ideas'.

Conclusions

The final diagnosis of a psychogenic or functional breathing disorder in a patient should not simply be an exclusion of organic causes, but a positive diagnosis of a clear defined clinical entity. The following criteria may be used to summarize the differentiation of psychogenic or functional breathing symptoms from organic ones:

- Usually no symptoms during sleep
- Mostly no typical trigger factors (except in VCD or as psychological triggers)
- Symptoms may occur suddenly and even at rest
- Variable duration, may quickly be regressive
- Speaking possible without problems
- Surroundings often more impaired than patient
- Normal diagnostic results (during episode of symptoms, except in VCD)
- Symptoms do not respond to adequate conventional pharmacotherapy

Intensive efforts should be made to diagnose psychogenic and functional symptoms, which may be confused with other disorders in children and adolescents at an early stage, because this will reduce or eliminate harm, prevent stigmatization and fixation of symptoms and disease, allow an untroubled life (including sports), and prevent patients from undergoing unnecessary and potentially harmful therapies (2).

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