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ORIGINAL ARTICLE

Quality of sleep in allergic children and their parents

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Abstract
Background: Quality of sleep is essential for physical and mental health and influences the perception of the patient's well-being during the day. In patients with chronic allergic diseases sleep disorders may increase the severity of the condition, complicate the management and impair their quality of life. When children are concerned, their parents are also affected by the problem. We evaluated the presence of disrupted sleep in parents of children with atopic disorders, and its relationship with clinical features and the presence of disturbed sleep in children.
Methods: Parents of children suffering from allergic diseases were recruited from the Pediatric Allergy Units of Parma University. Evaluation of sleep in parents was based on the Pittsburg Sleep Quality Index (PSQI), while in children it was based on the Sleep Disturbance Scale for Children (SDSC).
Results: Of the 102 parents invited, 92 filled in the questionnaire. Only the questionnaires with more than a 95% completion rate were considered for analysis. PSQI mean score in parents was 6.6 (SD 2.6); 75.6% of them had a PSQI ≥ 5, indicating that most parents had a sleep quality perceived as bad. The PSQI ≥ 5 was more common in parents of children with asthma and rhinitis. In children, SDSC mean score was 42.1 (SD: 9.4); 62.3% had a total score ≥ 39. The quality of sleep in parents and children was significantly correlated ($p < 0.001$).
Conclusion: These findings make it apparent that an alteration of sleep in children can also affect the parents. Such effect further weighs the burden of respiratory allergy and needs to be considered in future studies.

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Introduction

Quality of sleep is essential for physical and mental health and influences the perception of the patient's well-being during the day. In patients with chronic allergic diseases, including asthma, rhinitis, and atopic dermatitis, sleep disorders may increase the severity of the condition, complicate the management by the physician and adversely affect the quality of life and mood. The resulting impairments in performance of common daily activities affect both children and adults and generate social and health care costs.[1]

The causes of sleep disturbances in allergic diseases are numerous and many of these are also frequent in the general population (circadian rhythm disturbance, insufficient or ineffective sleep, inadequate sleep hygiene).[2]

Sleep quality may be altered in patients with respiratory allergy. Sleep impairment is common in allergic rhinitis, particularly in more severe forms.[3] Allergic rhinitis is a risk factor for ''sleep disordered breathing'' in children.[4] This term describes a large spectrum of abnormal respiration during sleep, ranging from primary snoring to obstructive sleep apnoea. Snoring time is in fact higher during the pollen season in subjects with allergic rhinitis.[5] In asthmatic patients nocturnal symptoms such as cough, wheezing and breathlessness may disrupt sleep quality. In children with wheezing, sleep quality is more frequently impaired than in children without wheezing due to difficulty in falling asleep, restless sleep and snoring.[6]

It should also be considered that some anti-allergic drugs, such as sedating antihistamines, can alter sleep due to their effect on the central nervous system.[7] Nasal decongestants containing pseudoephedrine are, on the contrary, associated with insomnia.[8]

Several tools are available to subjectively assess the degree of impairment of sleep in these patients.[9] Disease-specific QoL questionnaires are widely used to assess the impact of the disease on health and on sleep as suggested by recommendations from scientific societies.[10]

In children, the impact of a chronic disease also falls on the parents.[11] This impact must be considered with great attention in the management of illness that must be always shared by the parents and children.

The aim of this cross-sectional observational survey was to evaluate the presence of disrupted sleep in the parents of children with atopic disorders, and its relationship with clinical features and the presence of disrupted sleep in children.

Materials and methods

Subjects

Parents of children suffering from a allergic disease were recruited in the out-patient clinic of the Pediatric Allergy Units of Parma University between April and October 2010.

In order to be eligible, participants had to be parents of a child suffering from allergic rhinitis, asthma or atopic dermatitis. Parents with chronic diseases themselves were excluded from the study, although pre-existing sleep disorders cannot be ruled out.

After taking the clinical history, all children underwent physical examination and skin prick tests for common aeroallergens and foods. Asthmatic children also underwent spirometry.

Two written questionnaires, the Sleep Disturbance Scale for Children (SDSC)[12] and the Pittsburg Sleep Quality Index (PSQI),[13] were administered during the first visit of the child to the hospital, in order to asses sleep parameters in children and their impact on quality of sleep in parents, respectively.

Evaluation of sleep quality

Evaluation of sleep in parents was based on the PSQI, which is a self-administered, 23-item questionnaire that evaluates sleep quality and quantity. PSQI yields a seven components score: subjective sleep quality, sleep latency, duration, habitual sleep efficacy, sleep disturbance, use of sleeping medication and daytime dysfunction. As the score increases, sleep quality decreases and daytime dysfunction due to sleep disorder increases. The PSQI total score was calculated by adding the seven component score together (range between 0 and 21). A PSQI score greater than 5 reaches a diagnostic sensitivity of 89.6% and specificity of 86.5% in distinguishing good and poor sleepers.[13]

Evaluation of sleep in children was based on SDSC, which is a 26-item instrument for evaluating sleep among children aged 3–18 years. It differentiates among conditions, such as disorders of initiating and maintaining sleep, sleep breathing disorders, disorders of arousal, sleep–wake transition disorders, excessive somnolence, and sleep hyperhydrosis, which represent the most common areas of sleep disorders in children and adolescents. Higher scores indicate greater sleep disturbance, and a score of 39 has been established as the clinical cut-off.[12]

Both questionnaires are validated on the Italian population.

Evaluation of diseases severity

Diagnoses and severity of rhinitis, asthma and atopic dermatitis were defined according to Allergic Rhinitis and its Impact on Asthma (ARIA),[14] Global Initiative for Asthma (GINA)[15] and Scoring Atopic dermatitis (SCORAD).[16] In particular, rhinitis was classified as mild intermittent, mild persistent, moderate/severe intermittent and moderate/severe persistent; asthma was classified as intermittent, mild persistent, moderate persistent and severe persistent; atopic dermatitis was classified as mild, moderate and severe.

Statistical analysis

Statistical analysis was performed by SPSS computer program. Comparison of the variables was performed with the Chi-square test. Pearson's correlation analysis was performed for the correlations. *P* values less than 0.05 were regarded as statistically significant.

Results

Of the 102 parents invited, 92 filled in the questionnaire. Only the 90 questionnaires with more than a 95%