

Symptoms of rhinosinusitis.

This issue of our Journal contains a very interesting review from Eccles⁽¹⁾. Eccles discusses the four primary symptoms used to diagnose rhinosinusitis: nasal obstruction, nasal discharge, facial pain and loss of sense of smell⁽²⁾; and the secondary symptoms, cough, sneezing, sore throat and voice changes, epiphora, fever, and psychological effects and fatigue. From the Byzantine time and Hippocrates to recent times definition of nasal disease has been discussed⁽³⁾. It is interesting how little we know about the role symptoms of rhinitis and rhinosinusitis play in the diagnosis and evaluation of treatment of the disease. Although a number of guidelines and consensus documents have been developed, there are considerable differences in diagnostic criteria and a lack of an accepted gold standard diagnosis^(2, 4, 5). The term rhinosinusitis is now widely acknowledged and most people accept that rhinitis can occur without sinusitis but sinusitis not or only very seldom without rhinitis^(6, 7). We know that in rhin(osisinus)itis, as in diseases like asthma, the correlation between symptoms and objective signs like CT scan is limited⁽⁸⁻¹²⁾. Recently the reliability and validity of the epidemiological EP3OS definition of chronic rhinosinusitis was assessed using data collected as part of the large Global Allergy and Asthma Network of Excellence (GA²LEN) epidemiological postal survey and a follow up case-control study on upper airway disease across Europe. This study showed a moderate reliability over time and an association with the presence of features of CRS at nasal endoscopy⁽¹³⁾. However we are all very aware that symptoms of rhinitis and rhinosinusitis overlap considerably and further analysis is needed to try to unravel the contribution of the different symptoms to the diagnosis. Nasal blockage and rhinorrhea seem to be universal signs of most forms of rhinitis and rhinosinusitis; some other symptoms like reduction of smell or facial pain seem to differentiate better between the two. But these symptoms are also found in a considerable number of patients without CRS⁽⁹⁾. Some symptoms that were long thought to be characteristic of the disease have been shown to be not helpful, like fever in chronic rhinosinusitis⁽¹⁴⁾ or increase in facial pain on leaning forward do not seem to be related to chronic rhinosinusitis⁽¹⁵⁾. In acute rhinosinusitis on the other hand body temperature >38°C and maxillary toothache were the only two indicators of "real acute rhinosinusitis" in a Danish study⁽¹⁶⁾.

Most epidemiological studies in the former decade focused on the lower airways and had only one or two questions on the upper airways. Now in large epidemiological studies more attention is given to the upper airways and we are thus in need of better understanding of the most relevant differentiating symptoms. The ARIA classification gave a boost to thinking on allergic rhinitis and how to measure symptomatology of allergic and non-allergic rhinitis⁽¹⁷⁻²⁰⁾. Recently the term mixed rhinitis has been introduced describing patients with perennial symptoms but seasonal sensitizations⁽²¹⁾. In these patients it is often not clear what the sensitization contributes to the symp-

tomatology. Some patients experience more symptoms in the season, pointing to a role for the allergen; other patients do not experience more symptoms during the season implying a less important role for the allergen. The same is true in chronic rhinosinusitis. Most patients with CRS do not seem to notice periods of increased symptoms due to sensitizations. In those patients sensitization does not seem to play an important role however, there is some but not very strong indication that allergy does negatively influence the outcomes of sinus surgery⁽²⁾. However the role of sensitization to allergens in chronic rhinosinusitis is far from clear^(22, 23). Also differentiating between (exacerbations caused by) allergy and infection can be difficult. Patients and even some colleagues interpretate yellow or green mucus as a sign of infection. However with increasing numbers of leukocytes the nasal discharge appears yellow (pale green) and with large numbers of (eosinophilic) leukocytes the colour becomes green⁽²⁴⁾, so there is no correlation between infection and color of mucus, especially in severe allergy, mucus can be thick and yellow/greenish.

The recent (GA²LEN) survey for the first time in the world will give us proper population based data on chronic rhinosinusitis symptoms. The further definition of rhinosinusitis and rhinitis is extremely important. Now we have more and better studies showing the implications of rhinitis and rhinosinusitis on quality of life and the possibilities and implication of treatment on the disease⁽²⁵⁻²⁷⁾, we are in need of clearly showing to the public and the politicians the magnitude of the problem. We can only show that magnitude when we can clearly define ourselves what we mean.

The risks of becoming a low priority disease as described in the last issue by Prof. Valerie Lund are unfortunately not only a UK problem⁽²⁸⁾. Also in other countries reimbursement for rhinosinusitis is under pressure. It is up to us to fight for our patients to prevent this.

REFERENCES

1. Eccles R. Mechanisms of the symptoms of rhinosinusitis. *Rhinology* 2011;49: 131-138.
2. Fokkens W, Lund V, Mullol J. European position paper on rhinosinusitis and nasal polyps 2007. *Rhinol Suppl.* 2007; 1-136.
3. Prokopakis EP, Hellings PW, Velegrakis GA, Kawauchi H. From ancient Greek medicine to EP(3)OS. *Rhinology* 2010; 48: 265-272.
4. Marple BF, Stankiewicz JA, Baroody FM, Chow JM, Conley DB, Corey JP, et al. Diagnosis and management of chronic rhinosinusitis in adults. *Postgrad Med.* 2009; 121: 121-139.
5. Cervin A. Is it time to abandon chronic rhinosinusitis? (Or at least to introduce the term unexplained chronic rhinosinusitis). *Rhinology* 2010; 48: 123-124.
6. Fokkens W, Lund V, Mullol J. EP3OS 2007: European position paper on rhinosinusitis and nasal polyps 2007. A summary for otorhinolaryngologists. *Rhinology* 2007; 45: 97-101.
7. Van Crombruggen K, Van Bruaene N, Holtappels G, Bachert C. Chronic sinusitis and rhinitis: clinical terminology "Chronic Rhinosinusitis" further supported. *Rhinology* 2010; 48: 54-58.
8. Thulesius HL, Thulesius HO, Jessen M. What happens to patients with nasal stuffiness and pathological rhinomanometry left with-

- out surgery? *Rhinology* 2009; 47: 24-27.
9. Agius AM. Long-term follow-up of patients with facial pain in chronic rhinosinusitis--correlation with nasal endoscopy and CT. *Rhinology* 2010; 48: 65-70.
 10. Agius AM. Chronic sinusitis in Malta--correlation between symptoms and CT scan. *Rhinology* 2010; 48: 59-64.
 11. Hox V, Bobic S, Callebaut I, Jorissen M, Hellings PW. Nasal obstruction and smell impairment in nasal polyp disease: correlation between objective and subjective parameters. *Rhinology* 2010; 48: 426.
 12. Nair S. Correlation between symptoms and radiological findings in patients of chronic rhinosinusitis: a modified radiological typing system. *Rhinology* 2009; 47: 181-186.
 13. Tomassen P, Newson RB, Hoffmans R, Lotvall J, Cardell LO, Gunnbjornsdottir M, et al. Reliability of EP3OS symptom criteria and nasal endoscopy in the assessment of chronic rhinosinusitis - a GA(2) LEN study. *Allergy* 2011; 66: 556-561.
 14. Videler WJ, van Tol AW, van Spronsen E, Fokkens WJ. Fever is not a symptom of chronic rhinosinusitis. *Rhinology* 2009; 47: 393-395.
 15. Jones NS. Midfacial segment pain: implications for rhinitis and rhinosinusitis. *Clin Allergy Immunol* 2007; 19: 323-333.
 16. Hansen JG, Hojbjerg T, Rosborg J. Symptoms and signs in culture-proven acute maxillary sinusitis in a general practice population. *APMIS* 2009; 117: 724-129.
 17. del Cuvillo A, Montoro J, Bartra J, Valero A, Ferrer M, Jauregui I, et al. Validation of ARIA duration and severity classifications in Spanish allergic rhinitis patients - The ADRIAL cohort study. *Rhinology* 2010; 48: 201-205.
 18. Van Hoecke H, Van Cauwenberge P, Thas O, Watelet JB. The ARIA guidelines in specialist practice: a nationwide survey. *Rhinology* 2010; 48: 28-34.
 19. Bousquet J, Schunemann HJ, Zuberbier T, Bachert C, Baena-Cagnani CE, Bousquet PJ, et al. Development and implementation of guidelines in allergic rhinitis - an ARIA-GA2LEN paper. *Allergy* 2010; 65: 1212-1221.
 20. Bousquet J, Van Cauwenberge P, Khaltayev N. Allergic rhinitis and its impact on asthma. *J Allergy Clin Immunol* 2001; 108: S147-334.
 21. Bernstein JA. Allergic and mixed rhinitis: Epidemiology and natural history. *Allergy Asthma Proc* 2010; 31: 365-369.
 22. Pant H, Ferguson BJ, Macardle PJ. The role of allergy in rhinosinusitis. *Curr Opin Otolaryngol Head Neck Surg*. 2009; 17: 232-328.
 23. Houser SM, Keen KJ. The role of allergy and smoking in chronic rhinosinusitis and polyposis. *Laryngoscope* 2008; 118: 1521-1527.
 24. Stockley RA, Bayley D, Hill SL, Hill AT, Crooks S, Campbell EJ. Assessment of airway neutrophils by sputum colour: correlation with airways inflammation. *Thorax* 2001; 56: 366-372.
 25. Hopkins C. Patient reported outcome measures in rhinology. *Rhinology* 2009; 47: 10-17.
 26. Olsson P, Ehnhage A, Nordin S, Stjerne P. Quality of life is improved by endoscopic surgery and fluticasone in nasal polyposis with asthma. *Rhinology* 2010; 48: 325-330.
 27. Ragab SM, Lund VJ, Scadding G, Saleh HA, Khalifa MA. Impact of chronic rhinosinusitis therapy on quality of life: a prospective randomized controlled trial. *Rhinology* 2010; 48: 305-311.
 28. Lund VJ. Low priority procedures--a uniquely British concept. *Rhinology* 2011; 49: 1.

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