

Chronic Rhinosinusitis symptoms in UK patients with Fibromyalgia.

Jessica Bewick FRCS, Department of ENT, Addenbrooke's University Hospital,
Cambridge

Mudita Tripathi MRCP, Department of Rheumatology, Leicester Royal Infirmary,
Leicester

Sandeep Dahiya FRCP, Department of Rheumatology, Peterborough and Stanford
NHS Hospital Trust, Peterborough

Ibrahim Srouji FRCS, Department of ENT, Hinchingsbrooke NHS Trust, Huntingdon

Running title: CRS symptoms in Fibromyalgia

Financial Disclosure: Nil declared

No conflict of interests declared

Corresponding author: Ms J Bewick, Addenbrooke's University Hospital Trust,
Cambridge, CB2 0QQ, UK. (Jessica.bewick@gmail.com). 01223 245151.

Keywords: Chronic rhinosinusitis, Fibromyalgia, SNOT22, quality of life, facial pain

Abstract (200)

Background

Fatigue and bodily pain has been reported more frequently in patients with chronic rhinosinusitis (CRS), both are common symptoms in fibromyalgia. We investigated patient-reported sinonasal symptoms and sought to further characterise the distribution of facial pain in order to provide clinicians with a greater understanding of crossover CRS symptoms in the fibromyalgia population.

Methods

Adult patients with fibromyalgia, recruited in a district general rheumatology clinic completed the SNOT-22 questionnaire. And diagrammatic representation of facial pain. Results were collated and analysed using Microsoft excel.

Results

Eighty-three patients completed questionnaires; mean age 42 years and 80.72% patients were female. The mean SNOT22 was 41.42, both facial and sleep domains scored highly compared to the nasal and emotional domains. 48.6% patients had sought previous medical attention for nose/sinus symptoms, 29.2% had previously been given a diagnosis of 'sinusitis'. 96% of patients reported facial pain, most commonly in the forehead and midface.

Conclusions

Patients with fibromyalgia report SNOT-22 scores considerably higher than the general UK population. There is now a reference group to which patients can be compared to and highlights that patients with fibromyalgia report multi-region facial pain/pressure. Further studies to evaluate the presence of clinically apparent sinonasal disease would be useful.

Introduction

Chronic Rhinosinusitis (CRS) is a common problem affecting 5-15% of the European and North American population¹ characterised by inflammation of the nose/sinuses with concurrent nasal blockage or nasal discharge with or without facial pain or hyposmia. In addition there should be endoscopic and/or CT evidence of disease. A meta-analysis by Chester of outcomes in CRS identified fatigue and bodily pain as a significantly worse symptom in CRS patients compared to the general US population² suggesting a link to fibromyalgia which has some overlapping symptoms of fatigue and facial pain alongside functional disability. In our clinical practice, we observed that patients with CRS and concurrent fibromyalgia often showed less response to medical and surgical therapies and presented with facial pain as the dominant symptom. On the other hand some patients with myofascial pain of fibromyalgia are referred to the ENT clinic for treatment of their “sinusitis”.

While previous studies of pain within the head and neck region in patients with fibromyalgia have largely focused on pain within the temporomandibular joint and cervical spine³, facial pain is not well described. It was our clinical observation that patients presenting with facial pain often did not have significant clinical features of CRS although some had undergone previous endoscopic sinus surgery. Three studies have clearly documented an improvement in such patients post-operatively with regards to improvement in fatigue⁴, bodily pain² and global disease-specific quality of life (QOL) tools⁵ where CRS was clinically confirmed.

Minimal research has been conducted regarding the prevalence of CRS in patients with fibromyalgia. The stimulus for this study was the perceived increasing attendance of patients with a background of fibromyalgia presenting to an ENT

department with facial pain with little response to CRS treatment regimes. Many of the tools available to assess CRS symptoms contain elements (such as poor sleep, emotional wellbeing) which one might expect to receive high scores for severity in patients with fibromyalgia due overlapping of symptoms, regardless of whether CRS is present.

Aims of the study

1. To investigate what aspects of the SNOT22 questionnaire, a widely used questionnaire in the assessment of CRS, scored highly so that its use to monitor symptom control in patients with both conditions is more easily interpreted.
2. Measure the characteristics and severity of facial pain in fibromyalgia patients for better interpretation of this symptom when being included in the diagnostic criteria for CRS, especially when surgical treatment is being considered.

Materials and Methods

The project was approved by the Peterborough City Hospital Research and Development department in September 2013. It was assessed as investigating current practice and hence not deemed to require full ethical approval.

Patient cohort

Adult (>18 years) patients were recruited from an NHS rheumatology clinic. All patient had been diagnosed by a consultant rheumatologist with fibromyalgia⁶ and were offered voluntary participation in the study. Questionnaires were anonymised and kept confidential.

Questionnaire

Patients received a letter outlining the aims of the study; to avoid bias with regards to certain symptoms such as facial pain, patients were informed that the questionnaire was investigating ‘nose/sinus’ symptoms in a fibromyalgia cohort.

Part A consisted of the SinoNasal Outcome Test version 22(SNOT22) which is a disease-specific, internationally validated, quality of life questionnaire for chronic rhinosinusitis. It consists of 22 components which can be divided into the domains of Nasal/Facial/Sleep/Emotions⁷, each component relating to a ‘problem’ is graded from 0 – 5 depending how ‘bad’ a symptom it is. Patients were asked to grade the symptoms since their diagnosis of fibromyalgia. The domain scores were compared to previously published domain scores for the UK adults ^{8,9}.

Part B asked patients who scored more than 0 for the SNOT22 component regarding facial pain to detail on a simple diagram (see figure 1) the areas where pain had been experienced. To clarify the region the areas were marked with either forehead/jaw joint/midface/chin.

As the results were anonymous it was unknown how many patients had sought medical attention for their nose/sinuses’ and therefore a separate component (part C) asked for this additional information. Lastly, Part D assessed previous medication use in the nose such as sprays and drops.

Results were collated and analysed using Microsoft Excel.

Results

Eighty-three patients completed questionnaires, the mean age was 42.23 (range 17-82) and 80.72% patients were female. Completion rates of the questionnaires reached almost 100% for the full SNOT22 component (99.62%) but less for Part C (questions regarding previous nasal disease) at 86.7%. Only patients scoring 1-5 for facial pain were asked to complete Part B, again completion of this component was less, at 86.25%.

The mean SNOT22 was 41.42 (standard deviation of 16.12). SNOT22 domain scores can be seen in table 1. Patients with fibromyalgia scored more highly in both the facial, sleep and emotional domains when compared to a European study of CRS patients and the general population^{8,9}. Scores within the nasal domain were lower than those with CRS.

Seventy-two patients completed section C detailing previous nasal disease (11 patients did not answer), 48.6% patients had sought previous medical attention for nose/sinus symptoms (15% in the general population¹, 58.3% had taken nasal treatment, 41.7% claimed to have hayfever/rhinitis and 29.2% had previously been given a diagnosis of 'sinusitis'. The mean SNOT22 scores of patients who had reported seeking 'medical attention for their nose/sinus' was 42.63 compared to 38.54 in patients who had not.

The symptom of facial pain/pressure was scored at 1 or more in 80 patients. Of these, 11 patients did not answer the subsequent question detailing areas of pain/pressure. Of those who did, 29 patients had pain/pressure in more than one zone. The forehead was most commonly recorded as the region of pain (35 patients) followed by mid-face (28), pre-auricular (24) and chin (8).

Discussion

The primary study aim was to report SNOT22 scores in patients with fibromyalgia, which can be compared to both the normal population and CRS patients. The mean SNOT22 score was 41.42 which would be considered a high score when compared to both a healthy UK control population (7-12)^{8, 10} and pre-operative CRS patients (41.5)¹¹.

Further analysis of the data allows interpretation of which SNOT 22 domains of contributed to the raised score. High scores were seen within the ‘facial domain’ which includes not only ‘facial pain/pressure’ but also ‘ear pain/ pressure’, ‘ear fullness’ and ‘dizziness’, although the former had the highest score (3.93, 3.45, 3, 1.66 respectively). This confirms our hypothesis, that patients with fibromyalgia are likely to report facial pain, facial domain scores are higher than those expected for patients with CRS (table 1) and certainly higher than the healthy population raising the possibility of misdiagnosis of CRS in this patient group. While chronic rhinosinusitis can be considered one cause of facial pain there is a wide differential diagnosis and very unlikely to be the cause in the majority of cases. Low scores in the nasal domain (mean individual symptom score = 1.17-1.93) compared to a CRS population (see Table 1) support this as one would expect patients with CRS to report burdensome nasal discharge/blockage etc as per the EPOS 2012 criteria. It is interesting that 21.9% of patients reported a previous diagnosis of ‘sinusitis’, which is higher than expected for a general European population¹ and we would speculate that at least some of these patients may have been mis-diagnosed as there is no pathological reason for this group to have a higher incidence of CRS.

Patients reported several patterns of facial pain involving the forehead, central face, lateral face (including pre-auricular) and chin zones. While pain involving the TMJ has been well documented in fibromyalgia¹³, this study suggests that facial pain distribution can be widespread and to the best of our knowledge, facial pain has not been reported in the context of facial regions. The fact that there appears to be no one particular pattern to such distribution with 29 patients reporting multiple zones means clinicians should fully explore patients symptoms as pain over the pre-auricular/chin areas is not inkeeping with CRS. This impacts on ENT practice as patients with fibromyalgia who present facial pain should not be treated inappropriately and instead counselled about non-sinogenic causes of pain origin as part of their management.

High scores in the sleep domain which documents symptoms such as ‘waking up tired’/’difficulty getting to sleep’ also contributed to the raised SNOT 22 score and are in keeping with studies of fibromyalgia previously. Again, this is useful for the clinician as when using the SNOT22 score to guide treatment it can be explained to the patient that one might expect the score to remain high in these areas unless there is a significant change in the fibromyalgia. That said, fatigue has been shown to improve significantly following endoscopic sinus surgery in fibromyalgia patients⁴, the more severe the fatigue, the greater the improvement that was seen.

It is not only fatigue which has been shown to improve post-operatively; Soler et al showed that a sub group of CRS patients with concurrent fibromyalgia had significant improvement following surgery in many respects and of a similar magnitude to those without fibromyalgia¹³. The cohort had presented to a tertiary centre and while

endoscopic scores between groups were similar between sub-groups, patients with fibromyalgia were less likely to have nasal polyps, sinus opacification and more likely to be female with clinical depression.

Obviously the patients selection processes for these studies is very different than this current study; the characteristics of a group of clinician-diagnosed CRS patients is bound to be different from a random selection of fibromyalgia patients. Our study was not designed to do this but instead to provide baseline SNOT 22 scores in a UK fibromyalgia population in order that clinicians can realistically assess such patients with an expectation of confounding factors in association with fibromyalgia. The fact that there is such a contribution to the overall score by symptoms outside of the nasal domain suggests that improvement may be not only due correction of underlying disease. It is likely that the positive effect on patients who benefit globally from participation in trials, the enhanced medical input that they receive alongside the fact that their symptoms are now being taken seriously¹⁴ will have had some impact. It would interesting to assess the long-term effects of surgery on fatigue in this cohort when medical care is no longer as intense.

Limitations

As a cross sectional survey of patients with fibromyalgia this study does not determine which of these patients have CRS, CRS diagnosis based on clinical examination as per EPOS 2012 guidelines. On the other hand, as patients were surveyed outside the ENT clinic within a rheumatology practice, there is no reason to believe that the prevalence of CRS in this group and therefore SNOT 22 scores should be higher than the general population. The results provide clinicians treating patients

with known fibromyalgia who subsequently present with sinonasal symptoms with a reference cohort. Individual patients can be counselled regarding their score compared to that expected of patients with fibromyalgia. Hence the data can be used to guide treatment and anticipated outcomes of this.

While there are useful conclusions to be drawn from these results, it is recognised that there are limitations. The presence of a raised SNOT22 score does not confirm a diagnosis of CRS; to the contrary, the low score of nasal symptoms suggest that patients with fibromyalgia and facial pain should be fully assessed by a rhinologist to avoid unnecessary treatment especially surgery with its associated risks. The patient cohort may have been self-selecting to a certain extent, patients were asked to complete the questionnaire voluntarily and hence those with more severe symptoms/predominance of facial pain over other symptoms may mean the results are biased towards this group. The results are likely to be skewed due to the high proportion of female patients who are known to have higher SNOT22 scores⁸ but as fibromyalgia affects more females in general this is likely to reflect the clinical picture presenting to clinicians. The model to indicate the distribution of the facial pain was a new design and not validated.

Conclusions

This study provides the first analysis of CRS symptoms in the fibromyalgia population and will arm both ENT and Rheumatology clinicians with the expected symptoms of this cohort. Patients with fibromyalgia report higher levels of facial pain compared to CRS and general populations. Clinicians should be suspicious that this is

due to factors other than CRS and may be directly linked to fibromyalgia, leading to better selection of patients for sinus surgery.

References

1. Fokkens WJ, Lund VJ, Mullol J et al. European position paper on rhinosinusitis and nasal polyps. *Rhinology* 2012; Supplement 23.
2. Chester AC. Symptom outcomes following endoscopic sinus surgery. *Curr Opin Otolaryngol Head Neck Surg* 2009; 17: 50-8.
3. Friction JR. The relationship of temporomandibular disorders and fibromyalgia: implications for diagnosis and treatment. *Curr Pain Headache Reports* 2004; 8: 355-63.
4. Sautter NB, Mace J, Chester AC, Smith TL. The effects of endoscopic sinus surgery on level of fatigue in patients with chronic rhinosinusitis. *Am J Rhinol* 2008; 22: 420-426.
5. Soler ZM, Mace J, Smith TL. Fibromyalgia and chronic rhinosinusitis: outcomes after endoscopic sinus surgery. *Am J Rhinol* 2008; 22: 427-432.
6. Wolfe F, Smythe HA, Yunus MB, Bennett RM, Bombardier C, Goldenberg DL. Report of the Multicenter Criteria Committee. The American College of Rheumatology 1990 criteria for the classification of fibromyalgia. *Arthritis Rheum* 1990; 33: 160-72.
7. Lange B, Holst R, Thilking T, Baelum J, Kjeldsen A. Quality of life and associated factors in persons with chronic rhinosinusitis in the general population: A prospective questionnaire and clinical cross-sectional study. *Clin Otol* 2013; 38: 474-80.
8. Erskine SE, Hopkins C, Clark A, et al. SNOT-22 in a control population. *Clin Otol* 2016; Epub ahead of print.
9. Erskine S, Hopkins C, Kumar N, et al. A Cross Sectional Analysis of a Case-Control Study about Quality of life in Chronic Rhinosinusitis in the UK: a comparison between CRS subtypes. *Rhinology* 2016 (In press)
10. Gillett S, Hopkins C, Slack R, Browne JP. A pilot study of the SNOT 22 score in adults with no sinonasal disease. *Clin Otol* 2009; 34: 467-9.
11. Abdalla S, Alreefy H, Hopkins C. Prevalence of sinonasal outcome test (SNOT-22) symptoms in patients undergoing surgery for chronic rhinosinusitis in the England and Wales National prospective audit. *Clin Otol* 2012; 37: 276-82
12. Hedenberg-Magnusson B, Ernberg M, Kopp S. Presence of orofacial pain and temporomandibular disorder in fibromyalgia. A study by questionnaire. *Swed Dent J* 1998; 23: 185-92.

13. Soler ZM, Mace J, Smith TL. Fibromyalgia and chronic rhinosinusitis: outcomes after endoscopic sinus surgery. *Am J Rhinol* 2008; 22: 427-32.
14. Erskine SE, Verkerk MM, Notley C, Williamson IG, Philpott CM. Chronic rhinosinusitis: patient experiences of primary and secondary care—a qualitative study. *Clin Otol* 2016; 41: 8-14.

Figures List

Figure 1: Figure showing diagrammatic representation of the face labeled Zones A-D.

Table 1: SNOT22 scores of current study compared to previous publications.

Table 1.	Average score current study	Average score in Female CRS population ⁹ (without/with polyps)	Average score in patients Male CRS population ⁹ (without/with polyps)	Mean scores UK healthy population ⁸
Total SNOT22 score	41.4	49.6/49.5	41.1/47.7	12.0
SNOT22 domain scores				
Nasal domain	8.7	16.7/19.6	15.9/18.1	2.5
Facial domain	12.1	7.4/6.3	5/4.3	1.1
Sleep Domain	10.0	7.4/7.5	5.8/6.1	2.9
Emotional domain	7.7	12.7/11.1	9.7/9.2	3.5