Management of post-infectious olfactory dysfunction: a nationwide survey of UK ENT consultants

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Method: We prepared questionnaires and posted these to every consultant ENT surgeon registered with the British Association of Otolaryngologists Head and Neck Surgeons (BAO-HNS). Questions included preferred radiological investigation, smelling test and follow up.

Results: A total of 510 questionnaires were sent, with a response rate of 51%. Most UK consultant ENT surgeons investigated suspected post-infectious olfactory dysfunction by performing either a CT (44%) or an MRI (29%) scan, but only 37% performed formal smell tests. Most consultant ENT surgeons (76%) decide not to follow up post-infectious olfactory dysfunction.

Conclusion: This study gives an indication that suspected post-infectious olfactory dysfunction is not investigated thoroughly in the United Kingdom, with only a minority of clinicians performing formal smell tests and a lack of consensus as to radiological investigation. Standardisation of investigations is key to adequately managing suspected post-infectious olfactory dysfunction.

Introduction

Olfaction has historically been regarded as one of the most important senses, with Hippocrates himself placing the utmost importance on a full sense of smell for the true appreciation of life. The prevalence of olfactory disorders in the general population is a matter of debate, with one Swedish population-based study demonstrating a prevalence of 19.1%, of which 5.8% had anosmia. A similar study of an older American population obtained similar prevalence rates of 24.5%, with the prevalence increasing with age. In most cases of olfactory dysfunction the exact site of the lesion is unknown and thus categorisation by suggested aetiology is the norm. While obstructive causes such as chronic rhinosinusitis are thought to account for 70% of all cases of hyposmia, sensorineural causes are thought to account for the majority of permanent cases of anosmia.

Post-infectious olfactory dysfunction is the commonest cause of sensorineural anosmia and has proven itself to be difficult to treat, possibly due to permanent destruction of the olfactory epithelium in which the degree of olfactory impairment is directly correlated with the severity of histopathological appearances. The treatment of post-infectious olfactory dysfunction consists mostly of watchful waiting, as no treatment has been proven to alter the natural outcome of the condition, which is that around 30% of afflicted patients regain some sense of olfaction within one year of onset, in comparison to 10% of those whose anosmia was thought to be post traumatic in nature.

In view of this there is no consensus in the United Kingdom on how best to investigate patients with suspected post-infectious olfactory dysfunction or how to arrange follow up, with most authorities listing different investigational modalities without suggesting an agreed framework for investigating and managing this common condition. This is in contrast to some of our European neighbours, with German practitioners for example possessing clear guidelines on this issue (http://www.tu-dresden.de/medkhno/riechen_schmecken/LL_Riechen.pdf). Belgian rhinologists have also debated this issue and postulated guidelines, a fact which is little known amongst British ENT surgeons.

We determined to obtain data surrounding the current practice of British ENT surgeons with regard
to the management and follow-up of post-viral anosmia by using a postal survey.

Materials and methods

A questionnaire was posted to every British ENT Consultant registered with the British Association of Otolaryngologists and Head and Neck Surgeons (BAO-HNS) detailing a typical history of a patient with post-infectious olfactory dysfunction followed by a few questions (Appendix 1). The questions asked about radiological investigations, smell tests and follow up preferences, and contained a box for the addition of any additional information which may be helpful. A self addressed pre-franked envelope was included for return of the questionnaire.

Questions were limited to what could comfortably fit on one side of a sheet of A4 paper, in order to maximise the proportion of questionnaires returned.

Results

A total of 510 questionnaires were posted, of which 256 were returned (51% response rate). A record was kept of respondents and non-responders, with an initial 221 consultants responding to the survey. A second round of questionnaires was sent after a grace period of two months directed at those consultants not initially responding, which yielded a further 35 replies. Due to the poor response rate of the second round and the cost involved, no further rounds of questionnaires were sent. With regard to radiological investigations 112 responders (44%) would carry out CT scans, while 73 responders (29%) preferred to perform an MRI scan. Nine responders (4%) opted to perform both CT and MRI scans but 62 (24%) surgeons opted to do no radiological investigation whatsoever (Figure 1).

With regard to the smell tests, 160 responders (63%) stated that they would perform no formal smell test. Of those that would routinely perform smell tests 50 responders (20%) claimed that they would perform the University of Pennsylvania Smell Identification Test (UPSIT), 19 (7%) a smelling salt test, 5 (2%) an alcohol sniff test with the final 21 (8%) responders suggesting ‘other’ tests such as the ‘scratch n sniff’ test (Figure 2).

Follow up plans were less variable, with 195 (76%) opting for no follow-up, 32 responders (13%) opting for 3 month follow-up, 26 (10%) responders opting for 6 month follow-up and 3 (1%) responders opting for follow-up at one year (Figure 3).

In the free text box 27 consultants outlined that they would commence a trial of treatment at the first consultation consisting of either oral or nasal steroids (or in two cases both), while another three consultants described various treatments they would initiate including antibiotics and zinc supplements.

Discussion

This study reveals significant differences in the way post-infectious olfactory dysfunction is investigated radiologically. It has been demonstrated that CT scans of the nose and paranasal sinuses were useful in ascertaining if sinonasal disease and thus conductive causes of anosmia/hyposmia were present in those without obvious symptoms or clinical signs other than olfactory dysfunction, where 7/101 cases of presumed non-conductive anosmia were found to be due to a degree of sinonasal disease. Similarly, a trial of steroids is deemed useful in determining the role sinonasal disease plays in olfactory dysfunction. MRI on the other hand is useful in excluding central causes for olfactory dysfunction such as cerebrovascular accident or multiple sclerosis. MRI has also shown advantages over CT scanning in detecting rarer causes for olfactory disorders, such as meningioma of the olfactory region, and can display central causes when peripheral aetiological modes are also present. Indeed, the most detailed examination of all of the olfactory pathways is deemed to be functional MRI, in which MRI is combined with exposure to...
various odours. Interestingly none of the 256 responders noted that they would perform functional MRI in suspected post-infectious olfactory dysfunction, but this in all probability this is due to the fact that this mode of investigation is currently restricted to research studies.

It is clear therefore that radiological investigation is distinctly advantageous in investigating post-infectious olfactory dysfunction, and the fact that 24% (62) of responders would not consider performing any radiological investigation is a cause for concern.

The relatively similar split in those that would perform CT or MRI is also slightly worrying, given the identical history presented to all on the questionnaire. As discussed it is true that both modalities have useful but distinct roles in investigating post-infectious olfactory dysfunction, and this is further evidence that a standardised set of guidelines would be useful in directing British ENT surgeons towards a logical and evidence based investigational pathway.

Surprisingly few responders (37%) perform formal smell tests, with those that do opting for a wide variety of different modalities. This may be because of the wide variety of different tests available and the lack on any formal guidance or knowledge as to the different nuances of each available test. Performing formal smell testing is however regarded as being very important in differentiating hyposmia from anosmia, and in ascertaining if any subtleties of smell remain, which has widespread ramifications for the quality of life and potential toxic harm the patient can inadvertently be exposed to. Only 1 responder mentioned ‘Sniffin Sticks’ by name as a method of analysing the degree of olfactory dysfunction, which is interesting as this is one of the most widely used smell tests available elsewhere in Europe and has the advantage of normative data.

The vast majority of consultants (76%) did not follow up their patients in clinic, even though a portion of these (23 responders - 12%) volunteered that they had commenced a trial of treatment. A total of 30 responders volunteered that they would commence a trial of treatment although no treatment, including steroids, has been proven to alter the outcome in true post-infectious olfactory dysfunction. It is also interesting to note that three responders volunteered that they would give zinc supplements to their patients who present with a typical history of post-infectious olfactory dysfunction, while the evidence surrounding the use of zinc in post-infectious olfactory dysfunction indicates a lack of proven efficacy.

In the development of this study it was thought useful to ask additional questions around the initial case such as how management would change if parosmia were present, how much information would be given to the patient at the initial consultation and if information leaflets provided and so forth. It was decided that in order to attain the greatest reply rate possible the font size should be large and questions should not be too detailed or extend beyond one side on a standard piece of A4 paper. Now that these significant results are known a reasonable follow up study could include...
sends follow-on questionnaires to those clinicians that responded to the first study, or to send a new questionnaire asking new questions to all 510 members of the BAO-HNS.

This is the first such study to examine the way British ENT surgeons investigate suspected post-infectious olfactory dysfunction. The lack of standardisation in ordering radiological investigations and the disregard for performing formal smell assessment tests belie a poor understanding of smell disorders and is deserving of further study. As a solution to this problem we suggest the development of a specialist course, aimed at all general ENT specialists but rhinologists in particular, detailing the current evidence surrounding olfactory dysfunction and the best investigational modalities that should be used. The setting up of national guidelines similar to those employed in Germany and Belgium would also have clear advantages.

Conclusion

After conducting the first study examining how ENT surgeons investigate post-infectious olfactory dysfunction in the United Kingdom we were surprised at the general lack of uniformity in choosing radiological investigations, and the fact that almost a quarter perform no formal radiological investigation at all. This is despite the literature elucidating the clear, but different, benefits of both CT and MRI. What was more surprising was the fact that the vast majority of responders performed no formal smell analysis, while the literature is quite persuasive as to the value of performing such tests in order to differentiate between hyposmia and anosmia, and in tailoring the advice to give patients with regard to work and lifestyle choices. We found that follow-up of anosmic patients also differed significantly, but on the whole clinicians elected not to follow up their patients.

This study gives an indication that olfactory disorders are not optimally managed in the United Kingdom and more work needs to be done in order to better educate those ordering investigations. Drafting national guidelines may also be a pertinent means of solving this problem.

References


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Appendix 1

Introduction

Anosmia is a common finding in ENT outpatient departments. Other than flexible nasendoscopy to rule out blockage as a cause, there remains very little consensus between ENT clinicians on how to investigate this condition. We aim to determine the most common investigations employed by British ENT surgeons.
Please fill in this questionnaire based on the following scenario:

**Case Scenario**

A 40-year-old gentleman presents to your clinic with a three month history of anosmia following an upper respiratory tract infection. He has no other nasal symptoms, has no other medical history of note, takes no regular medication and has no known allergies. He has never smoked and drinks alcohol rarely. The ENT examination is unremarkable and flexible nasendoscopy reveals no evidence of any blockage.

**Questions**

1) Would you arrange any radiological examination? If no please go to question 3.
2) If yes, which investigation would you arrange:
   - CT
   - MRI
   - Functional MRI
   - Other________
3) Would you arrange a smell test? If no please go to question five.
4) If yes, which investigation would you arrange:
   - Smelling salt test
   - Alcohol sniff test
   - UPSIT
   - Other________
5) If the above investigations did not reveal anything of clinical value/you did not perform any investigations how would you arrange follow-up:
   - No f/u
   - f/u in 3 months
   - f/u in 6 months
   - f/u in 1 year

Thank you for completing this questionnaire. Please return it in the enclosed envelope. Many thanks again.

Mr. J. Mathews and team