

Dymista[®] Nasal Spray with Multifocal Analysis of its Impact on the Rhinitis Disease Experience

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Abstract

Background: Rhinitis is a prevalent condition both in primary care and in specialist centres. It has been shown to significantly impact on quality of life. Treatment is often best managed on combined therapies. Dymista[®] nasal spray is filling a niche for an 'all in one' treatment of allergic rhinitis.

Method: The MSNOT-20 is a valid disease specific quality of life instrument for rhinitis and rhinosinusitis and it was used to evaluate the symptomatic response to treatment with Dymista nasal spray.

Results: Dymista has been shown to improve all domains of the patient experience of rhinitis and rhinosinusitis with positive feedback by both patients and prescribing physicians.

Conclusion: Dymista is effective at improving patient symptomatology and improves quality of life. These positive results have opened up further avenues for research to explore its efficiency and place as mode of treatment.

Background

Rhinitis means inflammation of the nasal mucous membrane and often precedes sinusitis (inflammation of the lining of the paranasal sinuses), it is rare for sinusitis to occur without coexisting rhinitis and as such the most appropriate term for both is rhinosinusitis [1,2].

The MSNOT-20 questionnaire is a valid, disease specific quality of life instrument for Rhinitis/Rhinosinusitis (R/RS). The MSNOT-20 questionnaire has been shown to identify and discriminate between R/RS and non-disease and can evaluate the effect of treatment on symptomatology, based on severity scores, and on quality of life domains [3]. The MSNOT-20 consists of three sections; section one comprises of demographic details, section two is the disease specific section and section three is the quality of life section. The MSYP Questionnaire (MSYPQ), based on the MSNOT-20, is the equivalent tool to be used in young people (11-16 years old) and has proven to be able to identify and discriminate between R/RS and non-disease and to quantify severity [4-6]. This project shall use the MSNOT-20 to identify disease; it is validated for this condition and is disease specific as well as being technically quick and appropriate for the busy clinical setting.

Rhinitis affects the quality of life of sufferers and leads to deterioration in daily functioning related to study, work or profession. It is important to deal with the issues related to the disease and treat the cause in order to avoid physical, social and emotional issues which will help to optimize the efficiency and productivity of the educational and professional environment [7].

The MSNOT-20 questionnaire assesses symptomatology, which can be grouped into 7 different subgroups (Table 1), each one assessing a

different domain affected by R/RS including paranasal, social and sleep domains [4].

Subgroup	Questions within this sub group
Nasal	1, 2, 3, 19
Paranasal	5, 6,7,8,9, 10
Sinus	5, 6, 10
Ear	7, 8, 9
Sleep	11, 12, 13, 14
Social	15, 16, 17
Emotional	18, 20

Table 1: Breakdown of sub groups from section 2, MSNOT-20

Rhinitis and rhinosinusitis are some of the most frequent diseases in the population [1-8]. A large scale epidemiological study carried out in Farnborough, UK in 2002 quoted the prevalence of R/RS at 30% [4], which is slightly higher than a postal survey in the UK in 1991 which reported the prevalence of all forms of rhinitis to be 24%[9]. Seasonal allergic rhinitis has been shown to account for 16% in studies of 15-24 year olds [10,11].

The British Society of Allergy and Clinical Immunology (BSACI) have put forward an algorithm for treatment of Rhinitis which takes into account the symptoms and its severity; this has been adapted and is shown in Figure [12]. A brief summary is such that mild cases would

warrant oral or topical non-sedating anti-histamines used regularly with moderate to severe illness requiring additional intranasal corticosteroids. Further management would require a review of patient compliance, any dosage adjustments and even a modification of treatment dependent on symptomatology.

According to these guidelines, as above, and hence in clinical practice nasal steroids are frequently used as treatment for patients with nasal and sinus symptoms. Spraying steroids directly into the nose optimizes medication delivery to its target site, in this case the nasal mucosa, to maximize the wanted therapeutic effect; reducing inflammation which may be caused by an allergy or an infection [7,13]. There are many different nasal sprays available in the market, from over the counter to prescription only nasal sprays however most patients need to use the nasal spray for three to four days before they begin to notice any benefit. Multiple systematic reviews have proven intranasal corticosteroids to be effective at improving symptoms for allergic rhinitis [14,15] and it is currently endorsed by the BSACI guidelines for use in moderate to severe case (Figure 1).

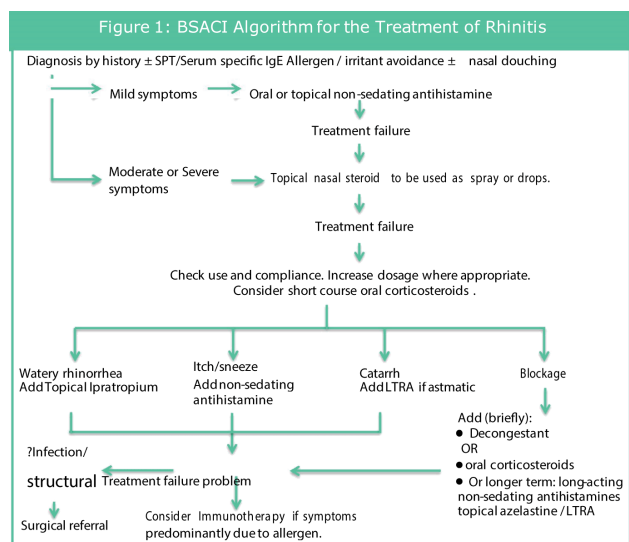


Figure 1: BSACI algorithm for the treatment of Rhinitis

Antihistamine nasal sprays are also used for nasal and sinus symptoms, they have been shown to improve rhinitic symptoms and quality of life [16]. Their function is to reduce swelling and relieve congestion by blocking the allergic cascade triggered by histamine. Effectiveness of these medications varies between individuals [17,18] such that where antihistamine may effectively relieve nasal and sinus symptoms in one patient it may prove not as effective in another. Antihistamines can be used either alone or in combination with steroid based nasal sprays. One study reported combination treatment (an antihistamine agent and a steroid agent) as being more efficacious in improving nasal symptoms than steroid, antihistamine and placebo treatment alone [19]. Combination therapy is also a strategy preferred, and more commonly used, by general practitioners [20]. Dymista nasal spray is a combination of azelastine hydrochloride (an antihistamine) and fluticasone propionate (a steroid agent) which will be assessed in this study.

The primary aim of this study was to assess the effect of Dymista nasal spray on patients suffering from rhinitis/rhinosinusitis

symptomatology with a detailed analysis on effects in different symptom subgroups. Secondary aims are to look into the patient experience when using this medication.

Method

Dymista nasal spray was used in this study which evaluated the response of rhinitis/rhinosinusitis sufferers' symptomatology to this medication. Section two of MSNOT-20 (Appendix 1) was used to assess patient symptomatology and symptom severity before treatment (values recorded when they first presented to clinic) and after treatment (the questionnaire was completed after 4 weeks of taking the medication). Treatment prescribed is defined as using the Dymista nasal spray at the recommended dose (see Dymista information leaflet for more details). This project was carried out during the pollen season.

SINO-NASAL OUTCOME TEST SECTION 2

ID: 12216

Below you will find a list of symptoms and social/emotional consequences of your rhinosinusitis. We would like to know more about these problems and would appreciate your answering the following questions to the best of your ability. There are no right or wrong answers, and only you can provide us with this information. Please rate your problems as they have been over the past two weeks. Thank you for your participation. Do not hesitate to ask for assistance if necessary.

1. Considering how severe the problem is when you experience it and how frequently it happens, please rate each item below on how "bad" it is by a tick in the box that corresponds with how you feel using this scale:

0=No problem.	3=Moderate problem	5 Most important items
1=Very mild problem	4=Severe problem	
2=Mild or slight problems	5= Problem as bad as it can be	

1. Need to blow nose 0 1 2 3 4 5
2. Sneezing 0 1 2 3 4 5
3. Runny nose 0 1 2 3 4 5
4. Cough 0 1 2 3 4 5
5. Post-nasal discharge 0 1 2 3 4 5
6. Thick nasal discharge 0 1 2 3 4 5
7. Ear fullness 0 1 2 3 4 5
8. Dizziness 0 1 2 3 4 5
9. Ear pain 0 1 2 3 4 5
10. Facial pain/pressure 0 1 2 3 4 5
11. Difficulty falling asleep 0 1 2 3 4 5
12. Wake up at night 0 1 2 3 4 5
13. Lack of good night's sleep 0 1 2 3 4 5
14. Wake up tired 0 1 2 3 4 5
15. Fatigue 0 1 2 3 4 5
16. Reduced productivity 0 1 2 3 4 5
17. Reduced concentration 0 1 2 3 4 5
18. Frustrated/restless/irritable 0 1 2 3 4 5
19. Blocked nose 0 1 2 3 4 5
20. Embarrassed 0 1 2 3 4 5

2. Please tick the most important items affecting your health (maximum of 5 items)

Appendix 1: Section 2 of MSOT-20

Patients considered for inclusion in this project were patients referred from general practice for assessment and treatment of their nasal and sinus symptoms as they were not responding to primary care treatment. Failure of primary care treatment is based upon BSACI treatment guidelines and equates to no significant response of symptomatology to oral or topical non-sedating anti-histamines used regularly then to additional intranasal corticosteroids. Such patients were assessed through history taking, clinical examination, skin prick test and Nasal Inspiratory Peak Flow (NIPF) at their first visit. The severity of the illness was quantified through the completion of section 2, MSNOT-20 which uses a Likert scale to represent increasing severity on a scale of 0-5, with 0 denoting no problem and 5 denoting that the symptom severity is as bad as it can be. Symptom severity was rechecked after four weeks of having started the treatment by, again, filling out section 2, MSNOT-20.

History taking and clinical analysis were used to determine suitability for involvement into the study and the data analysis presented in this study includes skin prick test results, nasal inspiratory peak flow results and data collected from section 2 of MSNOT-20 with a breakdown of symptomatology by grouping symptoms related to a particular pathology. These subgroups allow us to see how treatment affects each domain and are classified in Table 1. The overall result from the questionnaire was then analyzed for statistical significance.

Results

In total, data from 26 patients were found suitable for this research project. This study was initially planned to be larger however administrative and managerial restrictions limited the overall number of patients enrolled onto the study.

Allergy status and Nasal Inspiratory Peak Flow

Tables 2, 3 and 4 show the results of the skin prick test, common allergens and nasal inspiratory peak flow values, respectively.

Subgroup	Questions within this sub group
Nasal	1, 2, 3, 19
Paranasal	5, 6, 7, 8, 9, 10
Sinus	5, 6, 10
Ear	7, 8, 9
Sleep	11, 12, 13, 14
Social	15, 16, 17
Emotional	18, 20

Table 2: Skin Prick Test results

HDM	MGP	ALTERNIA	MTP	ASPERGILLUS	CAT	DOG	BIRCH POLLEN
15	16	2	4	1	6	6	5

Table 3: The allergens patients are sensitive to; HMD= House Dust Mite, MGP= Mixed Grass Pollen, MTP=Mixed Tree Pollen.

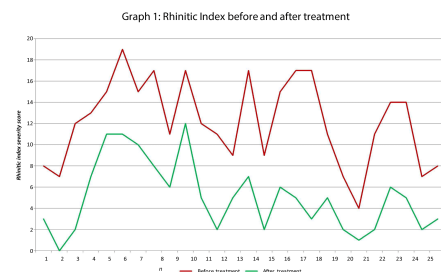
NIPF	n
Below 50	4
50-100	17
100-150	4
150-200	1

Table 4: Nasal Inspiratory Peak Flow values

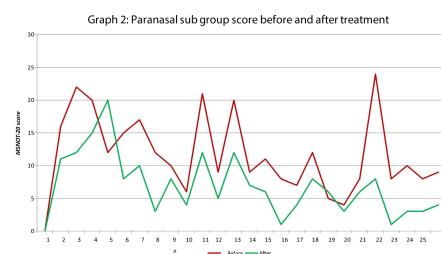
Symptoms subgroup analysis

This data has been graphically represented [Graph 1-9] to show the differences in symptom severity before and after treatment with Dymista. Each sub group is individually represented, with 'n' signifying each individual patient and the MSNOT-20 signifying the

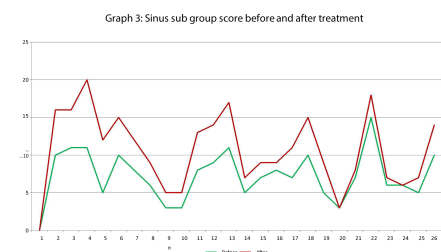
severity of disease. The score is calculated using the quantitative severity (on the 0-5 scale, see above) as chosen by the patient on their completed section 2, MSNOT-20.



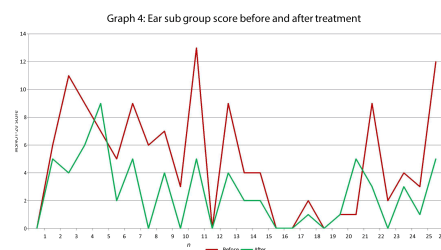
Graph 1: Rhinitis Index before and after treatment



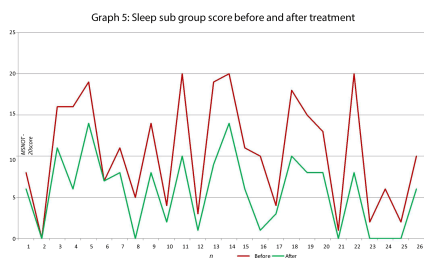
Graph 2: Para nasal sub group score before and after treatment



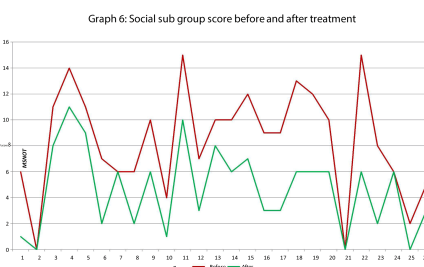
Graph 3: Sinus sub group score before and after treatment



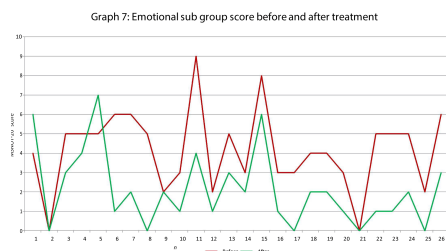
Graph 4: Ear sub group score before and after treatment



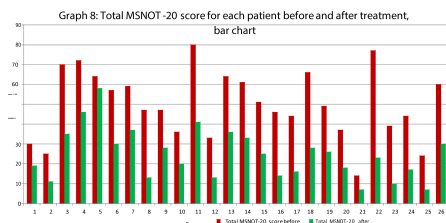
Graph 5: Sleep sub group score before and after treatment



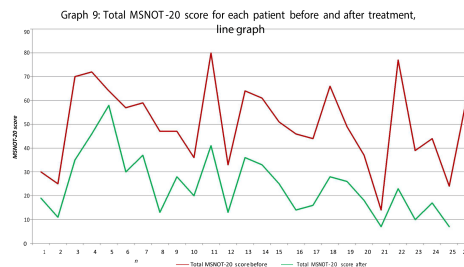
Graph 6: Social sub group score before and after treatment



Graph 7: Emotional sub group score before and after treatment



Graph 8: Total MSNOT-20 score for each patient before and after treatment.



Graph 9: Total MSNOT-20 score for each patient before and after treatment.

The Nasal subgroup score was analysed and is represented by a value called the 'Rhinitic index' (Graph 1), this value has been shown to be a good representative of symptoms associated with R/RS [3].

Overall MSNOT-20 score analysis

Graphs eight and nine show the total MSNOT-20 score (a result of the responses to all questions irrespective of sub group) before treatment with direct comparison to post treatment use score, this highlights the impact of treatment on patient symptomatology as a whole.

Statistical analysis

The statistical significance of change in symptomatology post treatment was calculated for each subgroup and the total MSNOT-20 score (this score was calculated by combining the data from each of the 20 items in Section 2 of the MSNOT-20). The statistical significance was calculated using Students T Test with the p value shown in Table 5.

Discussion

This study aimed to see the impact of the Dymista nasal spray on symptoms and symptom severity, as quantified by the validated disease specific quality of life questionnaire, MSNOT-20. This study further proved that the MSNOT-20 is a sensitive tool when analysing nasal and sinus disease and sensitive to changes in symptomatology following treatment.

This study was limited in number due to administrative and managerial issues; as such this shall be considered a pilot study with a larger project to be carried out in the future. These limitations also restricted the use of a control and comparison group. Having identified that Dymista has a positive impact on symptomatology and the patient experience (also see below) this opens the door to further projects which, on a larger scale, can use a greater sample with direct comparison to alternative treatment arms.

The majority of patients in this study had an allergic rhinitis with 73% of patients having a positive skin prick test [Table 2]. The commonest allergies [Table 3] were to house dust mite and mixed grass pollen. This is significant as the project was carried out during the pollen season and so represented the effect of the medication with patients at their symptomatic peak.

In this pilot project we did not use a positive skin prick test as an inclusion criterion as we wanted to first gauge the response of

symptoms related to R/RS to the medication and the patient experience. For future studies, as the majority of our patients suffered from allergic rhinitis, consideration can be given to using the skin prick test as such a criterion.

The Nasal Inspiratory Peak Flow (NIPF), a measure of nasal airway patency which is decreased by nasal obstruction, was less than normal in 15% of patients. It was not possible to repeat the NIPF at the 4 weeks symptom severity check due to issues with appointment allocations within the 4 week timeframe, the symptom check was unaffected by such problems as the questionnaire could be submitted or posted to the department within the 4 weeks. The NIPF has been shown to be an applicable tool to be used in monitoring response to treatment in allergic rhinitis patients [21] and this can be considered for future projects.

Analysis of all 7 subgroups [defined in Table 1, represented in Graphs 1-7] showed that there is a significant improvement in symptomatology in each subgroup after using Dymista. The greatest benefit was seen in the nasal sub group (Graph 1, named rhinitis index) showing patients found greatest improvements in these symptoms. This was followed by improvement in sleep scores [Graph 5], closely followed by the positive impact in the paranasal subgroup [Graph 2].

There was a statistically significant decrease in symptom severity in all subgroups, including the quality of life domains [Graph 1-7], and in the overall MSNOT-20 score [Graph 8 and 9]. These were all highly significant as all the calculated p values were equal to or lower than 0.01 [21] [Table 5].

Patient comments

Patients who used Dymista combination nasal spray (as opposed to the standard two individual sprays co-prescribed) found the combination spray more convenient and more effective to use. The below are a few remarks made by some patients, reproduced with permission:

“Within three days of using Dymista nasal spray I started noticing a difference”

“One bottle is really convenient to use, not a hassle at all!”

“Cheaper to buy one than two sprays”.

“Dymista nasal spray is more effective than all the other nasal sprays up until now”

Conclusion

This project reconfirms that the disease specific section of the MSNOT-20 is a sensitive instrument which can assess the changes in patients' symptoms. This study also concludes that Dymista nasal spray can help improve the patients' symptoms in all domains impacted by rhinitis and rhinosinusitis. The overall symptom burden and symptom severity is reduced and patients find this a satisfactory treatment method in terms of convenience and efficiency.

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