

Title: The application of Nasodren in patients with acute viral rhinosinusitis and acute non-viral rhinosinusitis

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Curriculum: <http://www.krzeski.pl/antoni-krzeski.html>

Objective

The objective of this study was a retrospective evaluation of aiding the treatment of acute viral rhinosinusitis (AVR) and acute non-viral rhinosinusitis (ANVR) with Nasodren.

Test group

Disease records and routinely completed self-observation sheets of patients with AVR and ANVR were subjected to retrospective analysis. The final analysis covered complete documentation of 99 patients treated by the same laryngologist, including at least 2 outpatient visits.

In the group of patients with acute viral rhinosinusitis the first visit was set to take place 7 days after visit zero.

In the group of patients with acute non-viral rhinosinusitis the first visit was set to take place 7-14 days after visit zero.

Depending on the diagnosis and applied treatment, patients were retrospectively divided into 4 groups:

1. Patients with **acute viral rhinosinusitis** using Sudafed (control group – group C)
2. Patients with **acute viral rhinosinusitis** using Sudafed + Nasodren (control group – group A)
3. Patients with **acute non-viral rhinosinusitis** using Sudafed + antibiotics therapy (Duomox) (control group – group D)
4. Patients with **acute non-viral rhinosinusitis** using Sudafed + antibiotics therapy (Duomox) + Nasroden (control group – group B)

Research methodology

Disease records and routinely completed self-observation sheets were subjected to retrospective analysis.

Inclusion criteria for analysis of patient records:

- Patients of both sexes diagnosed with acute viral rhinosinusitis and acute non-viral rhinosinusitis.
- Patients who completed and enclosed the self-evaluation sheet of disease symptoms to their disease records during each visit.

Exclusion criteria for documentation evaluation:

- Severe bronchial asthma
- Circulatory failure
- Other severe forms of systemic diseases (kidney, liver, thyroid, nervous system)
- Mental disorders
- Neoplastic diseases
- Pregnancy
- Breast-feeding period
- Age below 18 or over 60 years

- Patients during specific immunotherapy
- Patients with anatomical defects within the facial skeleton

During each visit, symptoms reported by the patient on the day of such visit are recorded in the disease report and symptoms are evaluated by a physician during a routine laryngological examination and endoscopy examination of nasal cavities. Patients routinely fill standard self-observation sheets which are correlated at each visit with rhinoscopic evaluation.

Symptoms recorded in the sheet:

I. Parameters within the scope of self-evaluation (self-observation sheet) (visits 1 and 2):

- Severity of the disease process on the VAS scale (0-10 points)
- Blocked/stuffy nose (0-3 points)
- Runny nose (0-3 points)
- Feeling of a bursting face (0-3 points)
- Impaired smell (0-3 points)

Method of evaluation: Gradual scale for nasal block, runny nose, feeling of a bursting face and impairment of smell.

- 0 - No symptom
- 1 - Symptom present
- 2 - Symptom intensified
- 3 - Symptom highly intensified

II. Parameters analysed by a doctor during a physical examination (visits 1 and 2):

- Presence of mucous and purulent secretions primarily in the middle nasal maetus
- Oedema of the mucous membrane in the middle nasal maetus
- Smell test, using the brand-name Pocket Smell Test (by Sensonics, Inc., U.S.)

Method of evaluation: interval scale in relation to Presence of mucous and purulent secretion primarily in the middle nasal maetus and oedema of the mucous membrane in the middle nasal maetus

- 0 – No (none)
- 1 – Yes (symptom is present)

Method of evaluation for the smell test: interval scale in relation to the number of correct answers in the odour recognition test

- 0-5 – anosmia
- 6-9 – hyposmia
- 10-12 – normosmia

Results

All calculations herein were performed using the statistical package STATISTICA v. 7.0. Values originally listed on interval scale for the purpose of the smell test evaluation were divided into integer groups (0 – anosmia; 1 – hyposmia; 2 – normosmia).

Severity of individual ailments on the basis of self-observation sheets and increase in symptoms on the basis of physical examination in individual groups of patients during visit 1 are shown in tables 2-9.

Severity of individual ailments on the basis of self-observation sheets and increase in symptoms on the basis of physical examination in individual groups of patients during visit 2 are shown in tables 10-17.

Tables 18-25 present the difference between results obtained during visits 1 and 2 in individual groups of patients.

Comparison of the average values of parameters analysed in patients from individual groups during visits 1 and 2, as well as the average difference between results obtained during these visits are shown in table 26.

Table 8. Severity of individual ailments in group D during visit 1. (The table shows average values, SD, W-values in the Shapiro-Wilk test and *p*-values)

Patient No.	Severity of the disease process	Nasal block	Runny nose	Feeling of a bursting face	Impaired smell
1	7	2	3	2	2
2	7	3	2	2	1
3	7	3	2	2	1
4	7	1	2	2	2
5	5	2	2	1	1
6	8	2	2	1	2
7	8	2	0	1	0
8	7	1	3	1	1
9	6	2	3	0	1
10	6	2	2	2	2
11	7	2	2	2	2
12	7	3	2	2	2
13	7	3	2	2	1
14	5	2	2	2	1
15	6	3	1	2	1
16	8	3	2	2	1
AVERAGE	6.750	2.250	2.000	1.625	1.313
SD	0.931	0.683	0.769	0.619	0.602
<i>W</i>	0.86158	0.79628	0.73636	0.64833	0.75896
<i>p</i>	0.02026	0.00243	0.00044	0.00005	0.00082

Table 9. Severity of individual symptoms in group D during visit 1. (The table shows average values, SD, W-values in the Shapiro-Wilk test and *p*-values)

Patient No.	Presence of mucous and purulent secretion	Oedema of the mucous membrane in the nose	Smell evaluation (rank)
1	1	1	1
2	1	1	2
3	1	1	1
4	1	1	2
5	1	1	1
6	1	0	1
7	1	0	2
8	1	1	2
9	1	1	1
10	1	1	1
11	1	1	1
12	1	1	2
13	1	1	2
14	0	0	2
15	1	1	2
16	1	1	1
AVERAGE	0.938	0.813	1.500
SD	0.250	0.403	0.516
W	0.27265	0.48429	0.64396
p	p < 0.000001	p < 0.000001	0.00004

Table 16. Severity of individual ailments in group D during visit 2. (The table shows average values, SD, W-values in the Shapiro-Wilk test and p-values)

Patient No.	Severity of the disease process	Nasal block	Runny nose	Feeling of a bursting face	Impaired smell
1	3	1	1	0	0
2	2	1	1	0	0
3	2	1	1	0	0
4	4	1	1	2	1
5	0	0	0	0	0
6	1	1	1	1	0
7	0	0	0	0	0
8	4	1	2	0	1
9	4	2	2	0	0
10	1	1	0	0	0
11	2	1	0	1	0
12	2	0	2	0	0
13	2	1	1	0	0
14	1	1	1	0	0
15	0	0	0	0	0
16	3	1	1	0	0
AVERAGE	1.938	0.813	0.875	0.250	0.125
SD	1.389	0.544	0.692	0.577	0.342
W	0.90733	0.71878	0.81401	0.50694	0.39846
p	0.10541	0.00027	0.00421	p < 0.000001	p < 0.000001

Table 17. Severity of individual symptoms in group D during visit 2. (The table shows average values, SD, W-values in the Shapiro-Wilk test and p-values)

Patient No.	Presence of mucous and purulent secretion	Oedema of the mucous membrane in the nose	Smell evaluation (rank)
1	0	1	1
2	0	0	2
3	0	0	2
4	0	0	2
5	0	0	2
6	0	0	1
7	0	0	2
8	0	1	2
9	0	1	1
10	0	0	2
11	0	0	1
12	0	0	2
13	0	0	2
14	0	0	1
15	0	0	2
16	0	1	2
AVERAGE	0.000	0.250	1.688
SD	0.000	0.447	0.479
W	0	0.54643	0.59088
p	p < 0.000001	0.00001	0.00001

Table 24. Differences in severity of individual ailments during visits 1 and 2 in patients from group D. (The table shows average values, SD, W-values of the Shapiro-Wilk test and *p*-values).

Patient No.	Severity of the disease process	Nasal block	Runny nose	Feeling of a bursting face	Impaired smell
1	4	1	2	2	2
2	5	2	1	2	1
3	5	2	1	2	1
4	3	0	1	0	1
5	5	2	2	1	1
6	7	1	1	0	2
7	8	2	0	1	0
8	3	0	1	1	0
9	2	0	1	0	1
10	5	1	2	2	2
11	5	1	2	1	2
12	5	3	0	2	2
13	5	2	1	2	1
14	4	1	1	2	1
15	6	3	1	2	1
16	5	2	1	2	1
AVERAGE	4.813	1.438	1.125	1.375	1.188
SD	1.471	0.964	0.619	0.806	0.655
W	0.9138	0.89227	0.77824	0.73215	0.79358
p	0.134	0.06052	0.00142	0.00039	0.00224

Table 25. Differences in severity of individual ailments during visits 1 and 2 in patients from group D. (The table shows average values, SD, W-values of the Shapiro-Wilk test and *p*-values).

Patient No.	Presence of mucous and purulent secretion	Oedema of the mucous membrane in the nose	Smell evaluation (rank)
1	1	0	0
2	1	1	0
3	1	1	-1
4	1	1	0
5	1	1	-1
6	1	0	0
7	1	0	0
8	1	0	0
9	1	0	0
10	1	1	-1
11	1	1	0
12	1	1	0
13	1	1	0
14	0	0	1
15	1	1	0
16	1	0	-1
AVERAGE	0.938	0.563	-0.188
SD	0.250	0.512	0.544
W	0.27265	0.63827	0.71878
p	p < 0.000001	0.00004	0.00027

Table 26. Average values for the results analysed in various groups during visits 1 and 2; average difference in results obtained during these visits.

		Visit 1		Visit 2		Difference visit 1-2	
		AVERAGE	SD	AVERAGE	SD	AVERAGE	SD
GROUP A	Severity of the disease process	6.586	1.427	1.862	2.083	4.724	1.869
	Nasal block	1.897	0.724	0.448	0.572	1.448	0.948
	Runny nose	1.793	1.037	0.724	0.673	1.069	1.307
	Feeling of a bursting face	1.793	0.819	0.207	0.412	1.586	0.907
	Impaired smell	1.241	1.057	0.034	0.186	1.207	1.082
	Presence of mucous and purulent secretion	0.621	0.494	0.172	0.384	0.448	0.572
	Oedema of the mucous membrane in the nose	0.931	0.258	0.172	0.384	0.759	0.435
	Smell evaluation (rank)	1.517	0.509	1.966	0.186	-0.433	0.504
GROUP B	Severity of the disease process	6.741	0.931	1.852	1.486	4.889	1.908
	Nasal block	2.148	0.683	0.481	0.509	1.667	0.679
	Runny nose	2.111	0.769	0.667	0.593	1.444	0.974
	Feeling of a bursting face	1.815	0.619	0.407	0.747	1.407	1.010
	Impaired smell	1.519	0.602	0.444	0.641	1.074	0.874
	Presence of mucous and purulent secretion	0.852	0.250	0.074	0.267	0.630	0.565
	Oedema of the mucous membrane in the nose	0.852	0.403	0.222	0.424	0.630	0.565
	Smell evaluation (rank)	1.500	0.516	1.741	0.447	-0.667	0.620
GROUP C	Severity of the disease process	5.778	1.717	2.296	2.163	3.481	1.949
	Nasal block	2.074	0.730	0.889	0.751	1.185	0.834
	Runny nose	1.778	0.617	0.963	0.811	0.815	0.879
	Feeling of a bursting face	1.111	0.892	0.370	0.792	0.741	0.903
	Impaired smell	1.296	0.993	0.519	0.753	0.778	0.801
	Presence of mucous and purulent secretion	0.519	0.509	0.222	0.424	0.296	0.669
	Oedema of the mucous membrane in the nose	0.704	0.465	0.333	0.480	0.370	0.742
	Smell evaluation (rank)	1.296	0.609	1.593	0.501	-0.296	0.542
GROUP D	Severity of the disease process	6.750	1.318	1.938	1.389	4.813	1.471
	Nasal block	2.250	0.534	0.813	0.544	1.438	0.964
	Runny nose	2.000	0.790	0.875	0.692	1.125	0.619
	Feeling of a bursting face	1.625	1.001	0.250	0.577	1.375	0.806
	Impaired smell	1.313	0.935	0.125	0.342	1.188	0.655
	Presence of mucous and purulent secretion	0.938	0.362	0.000	0.000	0.938	0.250
	Oedema of the mucous membrane in the nose	0.813	0.362	0.250	0.447	0.563	0.512
	Smell evaluation (rank)	1.074	0.730	1.688	0.479	-0.188	0.544

The Shapiro-Wilk test performed showed that the vast majority of analysed distributions of variables are abnormal. Therefore, when conducting subsequent analysis, non-parametric tests were applied.