

## Results of oral steroid treatment in nasal polyposis\*†

C. van Camp, P. A. R. Clement

Department of Otorhinolaryngology, Free University, Brussels, Belgium

### SUMMARY

*Twenty-five patients with massive nasal polyposis were treated during four days with 60 mg oral prednisolone (Deltacortril) followed by a progressive reduction of the dose (minus 5 mg per day). Therapeutic efficacy was evaluated by means of symptoms, anterior rhinoscopy, and a CT scan of the sinuses before and at the first visit after the treatment. Seventy-two per cent of the patients showed subjective improvement due to the involution of polyps in the nasal cavity. However, on CT of the paranasal sinuses only 52% showed a clear improvement. In general, the frontal and sphenoid sinuses were more likely to clear up completely than were the ethmoidal and maxillary sinuses. Therapeutic efficacy seemed to be better in the group of ASA-intolerant patients and worse in the allergic group. The "intrinsic" group showed an equal distribution of good results. Also, the presence of eosinophils in polyps played no role in the therapeutic outcome. We found a strong tendency of recurrence within five months after successful oral steroid therapy. On the other hand, pre-operative systemic steroid therapy considerably facilitated the surgical procedure. Keeping in mind the side effects of systemic steroid therapy, this treatment should be mainly reserved for cases in which surgery is planned.*

*Key words: nasal polyps, sinus surgery, oral steroid treatment*

### INTRODUCTION

Since the pathogenesis of nasal polyposis remains unclear, the therapeutic means are still part of an intensive discussion. The efficacy of systemic medical treatment is generally recognized, but for routine use not advocated (Ballantyne, 1979). In the literature only Scandinavian researchers have found a temporary statistically significant difference in favour of the medical treatment. Lildholdt et al. (1988) compared in a randomized trial a group treated with a single dose of 9 mg betamethasone (IM) with a group which underwent removal of visible polyps under local anaesthesia. Both groups received also a topical steroid therapy during the one-year study period. On the contrary, Wigand (1988) has advocated the endoscopic surgical treatment in all cases. In a series of 600 cases he has shown excellent results. The present study was started to see if oral steroid therapy could facilitate the surgical procedure or could avoid surgery, if possible.

### MATERIAL AND METHODS

From May 1990 to May 1992, 25 patients with severe or massive nasal polyposis, who were eligible for surgical

removal but showed no contra-indications for systemic steroid therapy, were treated with 60 mg oral prednisolone per day during four days (Deltacortril, 5-mg tablets; 3×4 tablets per day) followed by a progressive reduction of the dose (minus 5 mg per day). During this period an antacid (Maalox) was given for stomach protection. An antibiotic doxycycline, was added in case of infection. At the initial visit, symptoms and signs were recorded, along with the presence of visible nasal polyps. A CT scan of the sinuses established the diagnosis. Skin test and RIST-RAST were performed when thought necessary. ASA intolerance was checked in the history of the patients.

In those cases that were to be treated surgically we looked for the presence of eosinophils in the biopsies. At the first visit after the treatment (2 weeks to 2 months) the efficacy of the treatment was evaluated by re-assessment of the symptoms, the findings on anterior rhinoscopy and a second CT scan of the sinuses. The CT scans of the sinuses, before and after therapy, were evaluated following a staging scheme developed in our department (Figure 1), using a 0-3 scale for the maxillary, frontal and sphenoid sinuses, and a 0-2 scale for the ethmoidal cells.

\* Received for publication October 8, 1992; accepted February 22, 1993

† Paper presented at the 14th Congress of the European Rhinologic Society in Rome, Italy, October 6-10, 1992

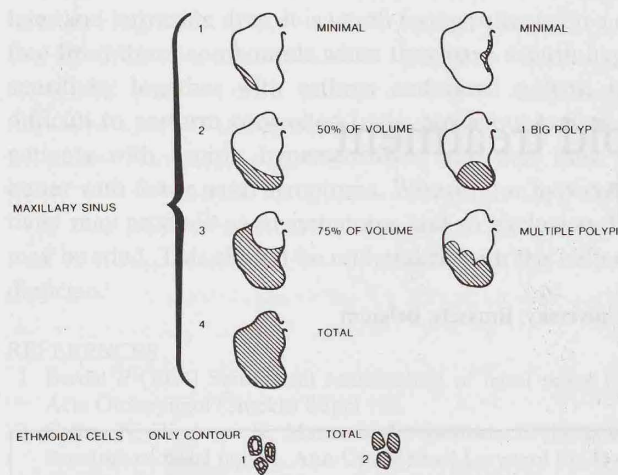


Figure 1. Grading of sinusitis and polyposis.

Table 1. Patients' data.

	sex		age range (in years)		
	female	male	25-40	40-55	55-70
total (n=25)	4	21	11	5	9
percentage	16%	84%	44%	20%	36%

Table 2. Associated features of nasal polyposis.

patients (n=25)	ASA intolerance	5 (20%)
	allergy (positive skin test or RAST)	4 (16%)
	"intrinsic" polyposis	16 (64%)
biopsy (n=16)	eosinophilia	13 (81%)

Table 3. Comparison of patients' symptoms before and after therapy.

	before	after
nasal obstruction	24 (96%)	11 (44%)
rhinorrhoea	13 (52%)	6 (24%)
headache	9 (36%)	5 (20%)
asthma	7 (28%)	2 (8%)
post-nasal drip	8 (32%)	2 (8%)
anosmia	12 (48%)	5 (20%)

According to the results (CT scans) the patients were divided into two groups: those with and those without improvement after oral steroid therapy. During an average follow-up of 12 months (2-22 months) the authors investigated the recurrence tendency in the "successful" group. Age and sex distribution are given in Table 1.

## RESULTS

Table 2 shows that ASA intolerance was found in 20% of the cases, which is less than expected (Chobaut, 1989). Oral aspirin provocation would probably reveal more positive

Table 4. Comparison of presence of visible polyps before and after therapy.

patients with endonasal polyps	before	after
bilateral	12 (54%)	7 (32%)
only left	3 (14%)	1 (4%)
only right	1 (4%)	3 (14%)
massive bilateral	3 (14%)	1 (4%)
only left	0	0
only right	3 (14%)	0
total	22 (100%)	12 (54%)
only visible on CT		3

Table 5. CT-scan incidence of presence of polyps before and after therapy (in percentage of total number of sinuses on both sides).

stage	before				after			
	0	1	2	3	0	1	2	3
maxillary sinus	4	10	32	54	26	14	34	26
ethmoidal sinus	4	12	84	0	12	52	36	0
sphenoid sinus	30	20	22	28	58	14	8	20
frontal sinus	18	22	16	44	52	12	10	26

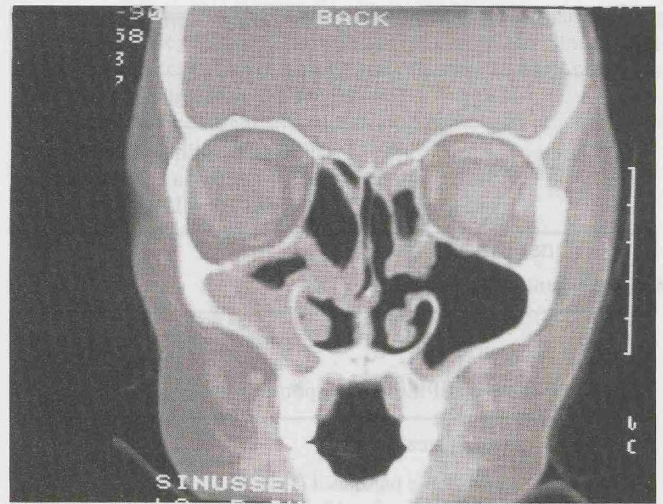
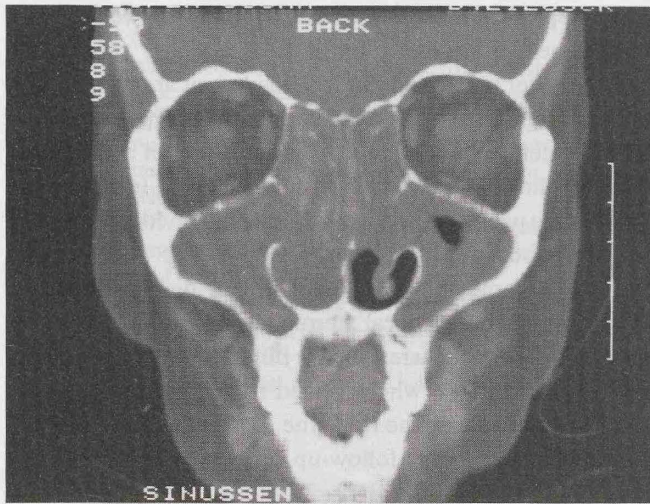
Table 6. Evaluation of results.

outcome	symptoms (n=25)	visible polyps (n=22)	polyps on CT (n=25)
worse	0	0	0
idem	7 (28%)	4 (18%)	12 (48%)
improved	15 (60%)	8 (36%)	11 (44%)
excellent	3 (12%)	10 (45%)	2 (8%)

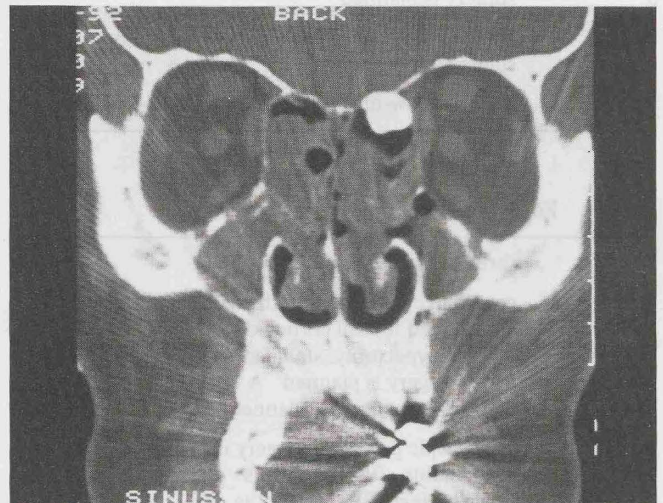
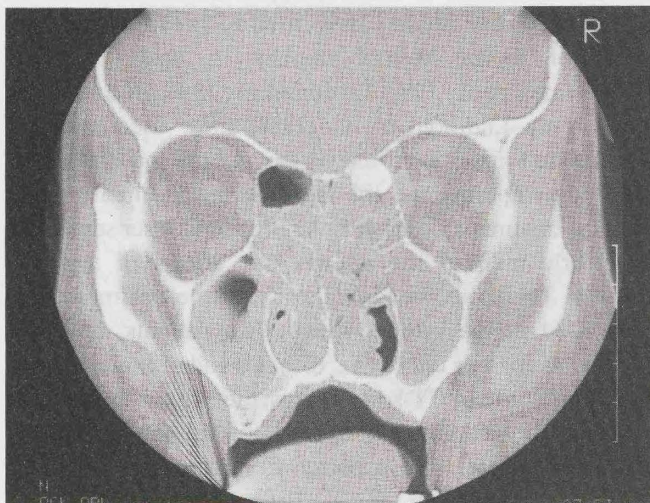
cases, but is not performed in our department since this can be very hazardous. The presence of atopy was 16% and this is approximately the prevalence of allergy in a normal population (Mygind, 1990). The majority of the patients (64%) was called "intrinsic", since they did not show ASA intolerance or atopy. The presence of 81% eosinophilic polyps was a common finding (Lildholdt, 1988).

Table 3 shows the patients' symptoms before and after treatment. Nasal blockage (96%) was found to be the major complaint before therapy. Nearly half of the patients initially suffered from rhinorrhoea and anosmia. Intrinsic or atopic asthma was found in 28% of the patients. After treatment the frequency of all symptoms decreased considerably. According to the results the patients were divided in four major groups ("worse"; "idem"; "improvement"; and "excellent", i.e. no polyps). Table 6 shows that 72% of the patients, three of which were free of symptoms, experienced a clear improvement. Especially nasal obstruction and smell were mentioned as important factors for improvement.

Table 4 compares the presence of visible polyps upon anterior rhinoscopy before and after treatment. Three of our



A  
B  
Figure 2. CT scans of the sinuses before (A) and after treatment (B) of a patient from the improved group.



A  
B  
Figure 3. CT scans of the sinuses before (A) and after treatment (B) of a patient from the non-responding group.

patients showed no endonasal polyps at the initial visit; CT scans, however, did show massive polyposis. From the 22 patients with visible polyps before steroid therapy, 10 showed a polyp-free nasal cavity after treatment. If the results are staged in four categories (cf., Table 6), eight patients showed a clear involution of nasal polyps after the treatment and only four did not show any improvement. This means that 81% of the 22 patients with endonasal polyps showed an objective amelioration.

Table 5 shows the staging of polyps in the sinuses before and after therapy, expressed as the percentage of total number sinuses on both sides. Initially, we found major polyposis (stage 3; stage 2 for the ethmoids) in 84% of the ethmoidal sinuses, followed by 54% of the maxillary sinuses, 44% of the frontal sinuses, and 2% of the sphenoid sinuses. After medical treatment there is a clear shift from stage 2 to stage 1 regarding the ethmoidal sinuses; only 36% still showed a major involvement and only 8% became polyp-free (stage 0 post-treatment minus stage 0 pre-treatment). Also, maxillary polyps were reduced, but 26% remained

stage 3. The best results were obtained by the frontal, sphenoid and maxillary sinuses: 34%, 28%, and 22%, respectively, became polyp-free. The results of the CT findings were classified in four major groups (cf., Table 6). Forty-four per cent of all patients showed a clear improvement after oral steroid therapy, and in two cases (8%) an even more spectacular result was found. Forty-eight per cent showed nearly no improvement at all and none became worse. From this one can conclude that there exist two groups of patients after oral steroid treatment on the CT-scan findings: one group called "improvement" showing a clear improvement upon CT scan of the sinuses after oral steroid treatment (52%), and a second group called "idem" showing nearly no improvement at all (48%). Figures 2 and 3 each show an example from those two groups.

Table 7 shows the distribution of the "aetiological" groups in the "improvement" and "idem" group. From the five ASA-intolerant patients, four were found to show improvement on CT scan of the sinuses after oral steroid treatment. In contrast, three out of four atopic patients did not show

Table 7. Comparison of associated features with results of CT sinuses.

result	n=25		biopsy (n=16)		
	ASA (n=5)	allergy (n=4)	"intrinsic" (n=16)	eosinophilia (n=13)	no eosinophilia (n=3)
idem	1	3	8	6	1
improvement	4	1	8	7	2

Table 8. Follow-up of the non-responding group (n=12).

n	further treatment
5	endoscopic paranasal surgery: n=3: stable after 10 months n=1: perfect after 6 months n=1: recurrence after 4 months
3	surgery is planned
2	polypectomy and topical corticoid therapy: stable after 4 months
2	lost in follow-up

Table 9. Follow-up of the improved group (n=13).

n	further treatment
8	recurrence within 5 months (2-12 months): all received topical corticoids n=5: polypectomy, stable after 3.5 months n=2: surgery is planned n=1: polypectomy is planned
2	endoscopic paranasal surgery is planned: n=1: stable after 12 months n=1: perfect after 16 months
1	topical corticoid therapy: stable after 9 months
1	no further treatment: stable after 2 months
1	lost in follow-up

any improvement at all. The good and bad results, on the other hand, are equally divided in the "intrinsic polyposis" group and the "eosinophilic polyps" group.

#### Results of follow-up

The group of 12 patients who showed no improvement on CT after oral cortison treatment was, logically, predestined for a surgical procedure. Five already underwent endoscopic paranasal sinus surgery, on average, two months after the end of the medical treatment. Follow-up after surgery showed a good result (Table 8). For three patients surgery is planned and two patients were found to be stable four months after polypectomy combined with topical steroid therapy. Two patients were lost during follow-up.

The group of 13 patients who presented obvious clearance of the sinuses on CT, received generally a further treatment

with a topical steroid spray (Table 9). Eight showed signs of recurrence within five months (mean value; range 2-12 months) after oral treatment. All needed, or are planned for, further surgical treatment. In five patients polypectomy had already been performed. All are stable after an average 3.5-month follow-up period after polypectomy. In two cases endoscopic paranasal surgery had to be planned and another patient is scheduled for polypectomy. For two patients endoscopic removal was planned already before this study. Only one patient on local steroid therapy does not as yet show any sign of recurrence after nine months of follow-up. For another patient, who received no further therapy, it is still too early to know the outcome (2 months of follow-up). One patient was lost in follow-up.

#### DISCUSSION

Glucocorticoids have effectively been used for several years in the treatment of nasal polyposis (Drake-Lee, 1991). Although several studies have tried to prove a beneficial effect of topical steroid therapy in nasal polyposis (Holopainen et al., 1982; Lindén et al., 1986; Ruhno et al., 1990), only Lildthold et al. (1988) have used systemic steroids and justify their use by the instant and efficacious relief in symptoms and the fact that most patients prefer medical treatment along with the probably lesser sensitivity of elderly men to the known side effects of systemic steroids. Therefore, we have chosen for the treatment regimen used in the present study. Two patients, however, showed major side effects, i.e. diabetes and a stomach ulcer. In a large study of CT scannings of the sinuses Clement et al. (1988) proved that the number of patients with nasal polyposis is larger than expected from simple anterior rhinoscopy. Immediately after oral steroid treatment 72% of our patients showed subjective improvement due to the (objective) involution of polyps in the nasal cavity. On CT scanning of the sinuses, however, only 52% had clearly improved. Patients suffering from ASA intolerance may expect to benefit more from steroid therapy than atopic patients. During follow-up we found a strong tendency of recurrence within five months after successful oral steroid therapy which made surgical intervention inevitable. On the other hand, surgery can considerably be facilitated by pre-operative oral steroid therapy (less bleeding and a better view during surgery as well as less traumatic). Initial medical treatment is therefore advocated (Josephson, 1989). Keeping all this in mind, systemic steroid treatment should be reserved for those cases that require surgery.

#### REFERENCES

- Ballantyne J (1979) Nasal polyposis. In: J Ballantyne, J Groves (Eds.) *Scott-Brown's Diseases of the Ear, Nose and Throat*, 4th Edition. Butterworths, London, pp. 225-234.
- Chobaut JC (1989) Actualités sur la polypose nasosinusienne. *Drugs and Diseases* 5: 85-95.
- Clement PAR, Van Der Veken P, Verstraelen J, Buisseret Th, Cox A, Frecourt N, Kaufman L, Derde MPR (1989) Some remarks on nasal polyposis. *Acta ORL Belg* 43: pp. 267-278.

4. Drake-Lee AB (1991) The value of medical treatment in nasal polyps. *Clin Otolaryngol* 16: 237-239.

5. Holopainen E, Grahne B, Malmberg H, Makinen J, Lindqvist N (1982) Budesonide in the treatment of nasal polyposis. *Eur J Resp Dis* 63: 221-228.

6. Josephson JS (1989) The role of endoscopic sinus surgery for the treatment of nasal polyposis. *Otolaryngol Clin North Amer* 22: 831-840.

7. Lildholdt T, Fogstrup J, Bammelgaard N, Kortholm B, Ulsoe C (1988) Surgical versus medical treatment of nasal polyps. *Acta Otolaryngol (Stockh)* 105: 140-143.

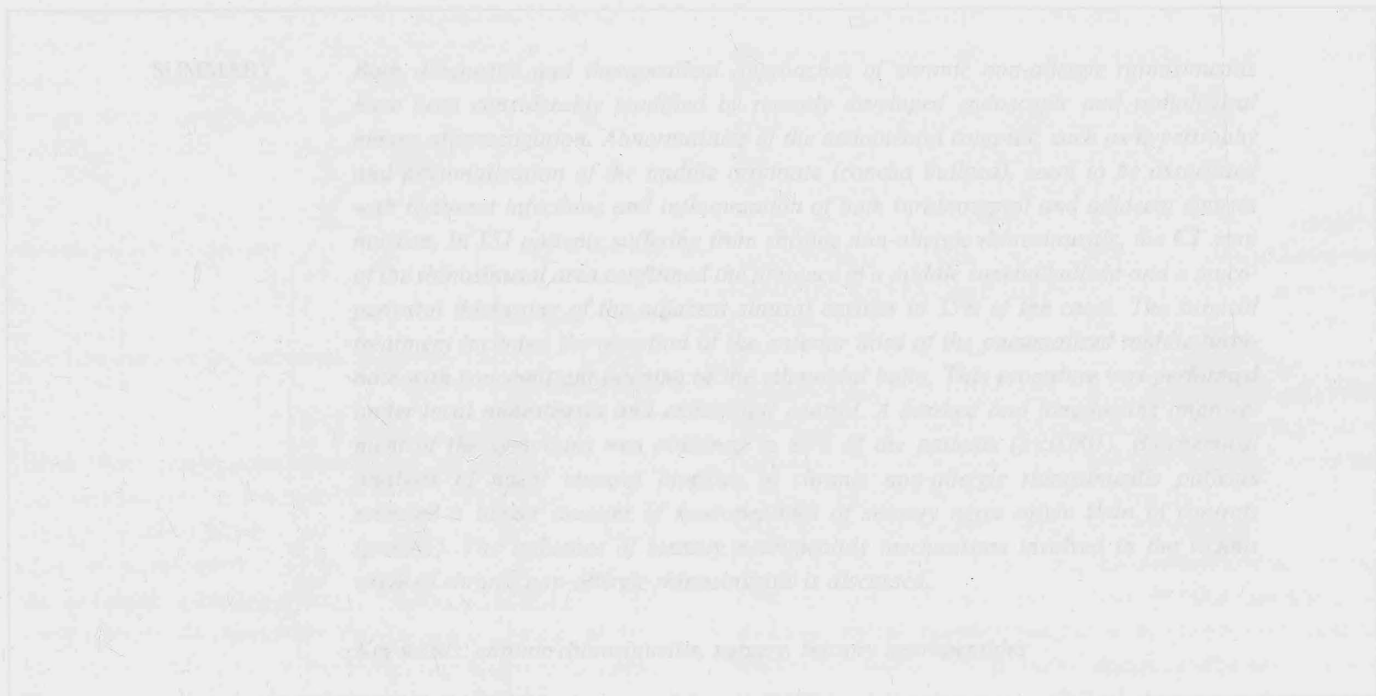
8. Lindén M, Hartwig S, Laurent C, Vargo AK, Lindqvist N (1986) The effect of budesonide on the recurrence of nasal polyps after evulsion. *Proc 11th ERS Congress and 5th ISIAN*, pp. 19-20.

9. Mygind N (1990) Nasal polyposis. *J Allergy Clin Immunol* 86: 827-829.

10. Ruhno J, Andersson B, Denburg J, Anderson M, Hitch D, Lapp P, Vanzieleghem M, Dolovich J (1990) A double-blind comparison of intranasal budesonide with placebo for nasal polyposis. *J Allergy Clin Immunol* 86: 946-953.

11. Wigand ME (1988) Recurrent polyposis nasi microsurgical treatment. *Rhinology, Suppl.* 3: 115.

C. van Camp  
 ENT Department  
 Free University of Brussels  
 Laarbeeklaan 103  
 B-1090 Brussels  
 Belgium



*[The text in this section is extremely faint and illegible, appearing as a light grey block across the bottom half of the page.]*