

Do antral washouts have a place in the current management of chronic sinusitis?

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Abstract

Antral washouts have been widely used in the management of chronic sinusitis. With the advent of modern antibiotics and powerful topical nasal steroids, we sought to establish if a role remains for this procedure.

One hundred and fourteen patients with chronic sinusitis were randomised into two groups. Patients in Group A received antral washouts followed by antibiotics and topical nasal steroids. Patients in the Group B received antibiotics and topical nasal steroids alone. In each group 51.6 per cent and 50 per cent of patients respectively improved with treatment. The outcome of treatment is also not influenced by endoscopic abnormality. The difference was not statistically significant ($p = 0.86$). The study indicates that half of patients with chronic sinusitis will improve with medical treatment but the addition of antral washout confers no additional benefits.

Key words: Sinusitis; Maxillary sinus, surgery; Endoscopy

Introduction

Chronic sinusitis is a common problem encountered by otolaryngologists world-wide. In the United States 31 million people are quoted to be suffering from sinusitis (Moss and Parsons, 1986) and 16 million physician visits were ascribed to it in 1989 (National Disease and Therapeutic Index, 1988–89). Treatment of chronic sinusitis is initially medical and those refractory to medical treatment are treated surgically. Irrigation of the maxillary sinus has been the simple procedure of choice in cases which fail to respond to medical care (Wright, 1979). With the advent of modern antibiotics and powerful topical nasal steroids, we sought to establish if there still remains a role for this procedure. We conducted a prospective study to evaluate the effectiveness of antral washout with medical treatment versus medical treatment alone.

Subjects and methods

One hundred and forty patients with chronic sinusitis diagnosed by history and clinical examination were randomised into two groups. Sinusitis was diagnosed by one or more of the triad of symptoms of facial pain or headaches, purulent nasal discharge or post-nasal drip and nasal obstruction. Supporting findings on endoscopic examination comprised the presence of mucopus swept from the sinus ostia and

polypoidal mucosa or oedema blocking the osteomeatal complex. Patients with nasal polyps were excluded from the study. The two groups were matched for age and sex. Of these, 114 completed the study and were available for analysis. Group A comprised 62 patients (32 women; 30 men) who had antral washouts followed by medical treatment. The median age was 45 years with a range of 16 to 85 years. Group B comprised 52 patients (26 women; 26 men) who had medical treatment alone. The median age was 40 years with a range of 15 to 65 years.

Antral washouts were performed under local anaesthesia using 25 per cent cocaine paste applied onto the inferior meatus at the point of cannulation. After three to five minutes, the maxillary sinus was punctured in the thinnest part of the medial wall. Once in the sinus, an aspiration was performed. Cloudy and discoloured aspirates were sent for microbiology. The maxillary sinus was flushed with saline until aspirations were clear.

Medical treatment in both groups consist of oral antibiotics and topical nasal steroids. The antibiotic prescribed in our study is Augmentin (amoxicillin 250 mg and clavulanic acid 125 mg given 8 hourly for 10 days or erythromycin 250 mg po qds for 10 days if they were allergic to penicillin). Topical nasal steroids comprised a two-weeks course of Betnesol nasal drops followed by aqueous Beconase nasal spray two puffs twice daily till review.

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TABLE I
ENDOSCOPIC FINDINGS AND THE OUTCOME OF TREATMENT WITH MEDICAL TREATMENT AND ANTRAL WASHOUT (GROUP A) AND MEDICAL TREATMENT ALONE (GROUP B)

Endoscopic findings	Group A		Group B		Significance
	Improve	Same	Improve	Same	
DNS	6	9	10	5	NS
IT	7	7	7	5	NS
OMC	12	12	10	11	NS
Normal	8	8	6	7	NS
Overall*	32	30	26	26	NS

DNS = Deviated nasal septum; IT = Hypertrophied inferior turbinate, OMC = Ostiomeatal complex abnormality (include middle turbinate hypertrophy, middle meatal mucosal oedema and polypoidal mucosa, mucopus)

NS = non significance ($p > 0.005$) using chi-squared test.

*Number of patients. Each patient may have more than one abnormal endoscopic finding.

Patients in the two groups were reviewed at two months to assess the outcome of treatment. They were reviewed at six-monthly intervals up to 18 months. Computer tomographies were organised for those with no improvement from the treatment and who were keen to proceed with endoscopic sinus surgery.

Results

Table I shows the endoscopic findings of the patients and the outcome of the treatment in the two groups. There was no significant difference in outcome of treatment in the two groups ($p = 0.86$) using the chi-squared test. None of the endoscopic findings appears to influence outcome of treatment in either group.

In group A, 45 and 17 patients had clear and productive (mucous or mucopus) returns respectively. Table II shows the outcome of treatment with respect to antral returns. The nature of returns does not correlate with symptomatic improvement ($p = 0.20$) using chi-squared test.

In group A, 23 of the 30 patients who had no symptomatic improvement underwent computer tomographic scan. Of these 20 of 23 (87 per cent) were abnormal with significant mucosal thickening of paranasal sinuses or blockage of the osteomeatal complex. In group B, nine of the 26 patients who had no symptomatic improvement underwent CT scan examination and all nine scans were abnormal.

Discussion

Chronic sinusitis may be defined as persistent inflammation and suppuration of the paranasal sinuses for longer than three months (Johnson, 1992). Inflammation of the sinonasal mucosa leads to obstruction of the narrow osteomeatal complex. (Stammberger, 1986). Coupled with gravity and

decreased mucociliary clearance, an inspissation of secretions in the sinus occurs which is a culture medium for bacterial growth. The pathogens documented in numerous studies do not seem to correlate with the nasal or nasopharyngeal bacteria (Stammberger, 1986). The use of endoscopy has facilitated the examination of the middle meatal area and has helped in obtaining a more accurate diagnosis (Kennedy *et al.*, 1987). Conventional plain sinus X-rays although helpful in acute inflammatory disease and aggressive pathology are of limited value in chronic inflammatory disease (Zinreich, 1993). Computer tomography is the imaging of choice if performed. The goals of management of chronic sinusitis are to eradicate infection, relieve osteomeatal obstruction and normalise mucociliary clearance. Medical measures consist of appropriate antibiotics, topical nasal steroids, with or without decongestants. Unsuccessful medical treatment requires surgical intervention (Johnson, 1992).

Antral washout (AWO) has been used in the management of sinusitis for at least a century (McBride, 1908; Kelson, 1915). In the pre-antibiotic days, the need for sinus surgery was very much more common than today (Stevenson and Guthrie, 1949). With the advent of topical nasal steroids and effective broad spectrum oral antibiotics, the need for AWO is not as well defined.

The aims of AWO have been to collect samples for culture and sensitivity, reduce the bacterial load by flushing out debris, infected and inspissated mucus that perpetuate the infection, and attempt to clear any obstruction of the maxillary ostium. Whereas collection of samples for culture and sensitivity by antral washout may ensure use of an appropriate antibiotic, choice of antibiotic may be empirical. Acute exacerbations of chronic sinusitis may be due to the pathogens of acute sinusitis, which are frequently *Streptococcus pneumoniae*, *Haemophilus influenzae* or *Moraxella catarrhalis*. Amoxycillin is therefore a popular choice, and addition of clavulanic acid overcomes resistance due to production of β -lactamase. In quiescent stages, the infecting organisms may be different, and include anaerobes (Fairbanks, 1993) hence the choice of Augmentin in the present study. None of the positive bacteriology cultures in our study were resistant to Augmentin. Empirical antibiotic treatment would therefore

TABLE II
GROUP A—OUTCOME OF PRODUCTIVE AND CLEAR RETURNS

	Improvement	No Improvement
Productive	11	6
Clear	21	24

$\chi^2 = 1.60$; $p = 0.20$.

appear from this study to be as appropriate as that based on culture of organisms from the sinus lumen. Culture of endoscopically-guided swabs from the middle meatus may be indicative of the organisms within the sinus but needs to be evaluated against culture of species obtained via proof puncture.

In our series, none of the patients had a completely obstructed ostium which precluded a successful washout. Our series demonstrates that the addition of antral washout does not confer significant benefit over medical treatment alone. Endoscopic abnormalities also do not influence the outcome of treatment. This result suggests that the maxillary sinus which the antral washout clears may not be the critically affected area in chronic sinusitis. Messerklinger showed that in most cases, infection spread from the anterior ethmoidal area and middle meatal region to secondarily affect the maxillary and frontal sinuses (Messerklinger, 1967). Kennedy *et al.* (1985) have shown that severe mucosal disease resolves when ventilation and mucociliary clearance of mucosa is restored and ethmoidal disease is eradicated. AWO does not address the critical area of the anterior ethmoid cells and middle meatus. This may explain why there is no significant advantage of antral washout and medical treatment over medical treatment alone.

Conclusion

We conclude that the addition of antral washout confers no additional benefit in the treatment of chronic sinusitis compared to medical treatment alone. Overall treatment results indicate about half of the patients with chronic sinusitis will improve with medical treatment with, or without, antral washouts. Washouts productive of mucus or mucopus were more likely to improve the sinusitis.

We hypothesise the failure of AWO to confer any additional benefit to medical treatment is because it fails to address the critical area of the anterior ethmoid cells and middle meatus.

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