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Acute maxillary sinusitis – A comparison between 27 different treatment modes

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SUMMARY

When comparing the outcome of different treatment modes for acute maxillary sinusitis, the roentgenological examination can be recommended for the objective evaluation as a complement to the clinical examination. Using the occipito-mental projection and an additional occipito-mental side view, the diagnosis can be established in a cheap and simple way, and the treatment effect can be followed during the course of treatment in the form of radiological sinus changes.

The treatment outcome of 27 different treatment modes in 1320 cases of acute maxillary sinusitis (2039 maxillary sinuses) was compared. There was little difference between the treatment groups as to therapeutic effect, whether using antral drainage alone, antibiotics alone or the combination of both. Factors other than treatment outcome must be important for the consideration of treatment choice, e.g. pharmacokinetics, administration, dosage, treatment cost, number and type of side effects, etc.

INTRODUCTION

Acute maxillary sinusitis, as well as many other diseases, has no simple and superior remedy accepted as the treatment of choice. Therefore, it is of interest to study different modes of therapy and to discuss their effects and side-effects. In our investigations, 27 different treatment modes have been studied (Axelsson et al. 1970, '71, '73, '75, '80; von Sydow et al. 1981, '82). It is obvious that a correct diagnosis is essential for the evaluation of treatment effect. An uncomplicated rhinitis needs a different kind of therapy than an acute maxillary sinusitis, but the difference is not infrequently indistinct from the clinical viewpoint.

DIAGNOSIS

The patient's history and the inspection of the nasal mucosa may not always be sufficient for the diagnosis of acute maxillary sinusitis. All the infectious organisms causing acute maxillary sinusitis induce the same histopathological changes with

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mucous membrane thickening and secretion. When comparing the efficacy of different treatment modes, these objective signs must be referred to in order to establish an objective diagnose and to compare the treatment effect.

Transillumination of the maxillary sinus is an old diagnostic method that is simple but not reproducable and not always reliable. Evans et al. (1975) have used this method in a treatment study.

The diagnostic irrigation – for the demonstration of pus and/or bacteria in the maxillary sinus – gives objective information (Carenfelt et al., 1975; Berg et al., 1981) but may be uncomfortable for the patient – especially when repeated during the treatment course. This is true also for sinuscopy (Illum et al., 1972; Draf, 1975) that must be regarded as too complicated to be a routine diagnostic method.

Maxillary ultrasonography is a simple, non-invasive method without any risks of radiation exposure (Revonta, 1980; Jannert, 1982). However, with the commercial echoscopes obtainable to-day, we can only confirm or not confirm the mucosal swelling and secretion of maxillary sinusitis.

The roentgenological examination is equally painless and safe but it also has the advantages of reproducibility and accuracy in reflecting the histopathological sinus changes. The course of healing can thus be demonstrated with successive examinations.

EXAMINATION METHOD

In our investigations of acute maxillary sinusitis we have used the same diagnostic method since 1970. As a complement to the clinical examination, the roentgenological state of each sinus was classified according to a 6-point scale:

Mucous membrane thickening ≤ 6 mm	1 point
Mucous membrane thickening > 6 mm	2 points
Secretion	2 points
Mucous membrane thickening ≤ 6 mm+secretion	3 points
Mucous membrane thickening > 6 mm+secretion	4 points
Complete opacity	6 points

The treatment results were analysed by comparing the points achieved on the 1st, 5th, 10th and 15th day, respectively.

We want to emphasize that each patient has also been clinically examined and interviewed, considering the disease as affecting the whole organism and not only the maxillary sinus. The radiological point scale has been shown to correspond well to the clinical state of the maxillary sinusitis (Axelsson and Runze, 1976), and will be used in the following chapters as the objective measuring reference.

In general, a paranasal sinus roentgenological examination contains 4 standard projections: the occipito-frontal, the occipito-mental, the lateral and the axial, all

with the patient sitting and with a horizontal beam. In our opinion, the occipitomental projection should be the basic projection for the evaluation of the maxillary sinuses. Additionally, it often gives reliable information on the frontal sinuses. If the findings are normal, no further projections are needed. Any roentgenological changes in the maxillary sinuses (except complete opacity where the axial projection is recommended) require occipito-mental views with the head tilted down towards the diseased side, this being the best view for the demonstration of sinus secretion (Axelsson and Jensen, 1974). The adoption of this routine procedure not only diminishes time, but has the further advantage of increased reliability in demonstrating the inflammatory roentgenological sinus changes by including the occipitomental side view.

TREATMENT METHODS AND RESULTS

In the treatment of acute maxillary sinusitis (with clinical symptoms and radiological verification of sinus secretion), a clinical effect may be expected with nasal decongestants alone, with irrigation alone and with different kinds of antibiotics

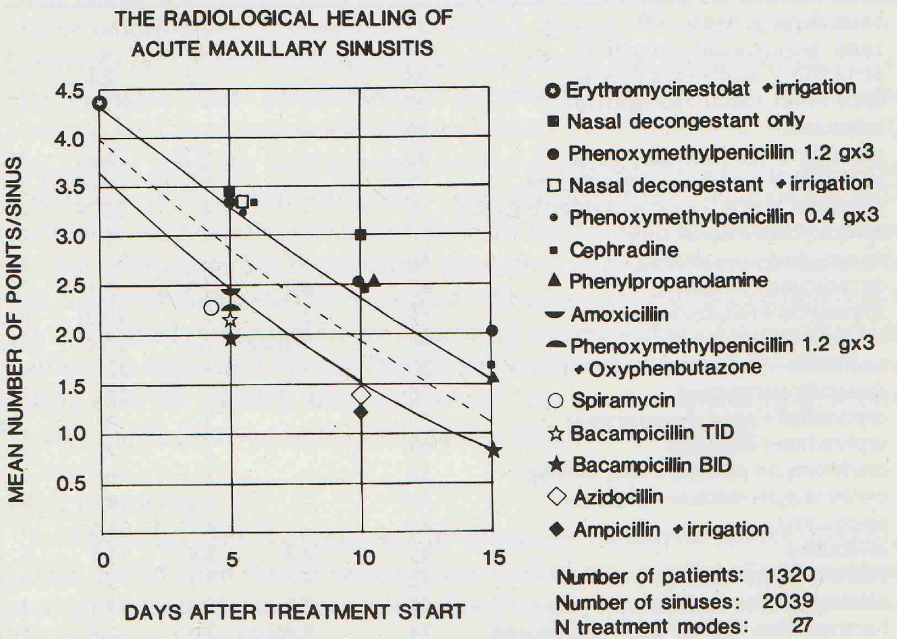

Figure 1. The radiological healing of 27 different treatment modes in acute maxillary sinusitis.
- - - - - - = mean healing for all different treatments
——— = enclosing the P95 confidence limits
(Symbols above the upper solid line indicate statistically poorer radiological healing; symbols below the lower solid line indicate statistically better radiological healing).

(alone or in combination with irrigation or a nasal decongestant). A self-cure rate of 79% after 2 weeks (without any therapy except analgetics) has been reported by Mann et al. (1981).

In our studies, 27 different treatment modes were compared (Table I). A total of 1320 patients with acute maxillary sinusitis (2039 maxillary sinuses) were treated.

All patients were followed clinically and radiologically during ten days of therapy, and most of them for another five days. The subjective evaluation of the clinical effect was made parallel to the radiological score counting and gave similar

Table I. Side effects and complaints, in per-cent of number of patients in each group. Figures within brackets indicate the per-centage of patients where treatment was discontinued because of side effects.

		side effects (4)			
treatment group no.	no. of patients	skin	upper gastro-intestinal	lower	total
1 nasal decongestant	34	–	5.9	–	5.9
2 nasal decongestant+irrigation	44	–	–	–	4.5
3 penicillin V acid[1])+nas.decong.	38	–	5.3	2.6	7.9
4 lincomycin+nasal decongestant	40	–	–	67.5	67.5
5 irrigation	50	–	–	–	6.0
6 penicillin V acid[2])+nas.decong.	50	–	6(2)	28(8)	36.0
7 penicillin V acid[2])+irr.+nas.decong.	49	–	8.2(2)	28.6(6.1)	34.7
8 penicillin V acid[2])+n.d.+oxyphenbutazone	50	–	4	12(2)	42.0
9 methacycline+nas.decong.	50	–	4	8	12.0
10 doxycycline+nas.decong.	50	–	2	–	16.0
11 doxycycline+irrigation	47	6.4	4.3	2.1	21.3
12 spiramycin+nas.decong.	50	2	6	22(2)	44.0
13 spiramycin+irrigation	46	2.2(2.2)	2.2	13(4.3)	34.8
14 ampicillin++nasal decongestant	50	–	–	22	34.0
15 ampicillin+irrigation	50	2	2	22	34.0
16 cephradine+nasal decongestant	50	–	2	2	20.0
17 cephradine+irrigation	49	–	2	2	18.4
18 erythromycin estolate+ nas. decong.	50	–	2	6	24.0
19 erythromycin estolate+irrigation	50	–	–	14	34.0
20 amoxicillin	43	–	4.7	18.6	37.2
21 azidocillin	45	2.2	8.9	11.1	31.1
22 phenylpropanolamine	42	–	7.1	–	28.6
23 pivampicillin	45	2.2	15.6	11.1	40.0
24 bacampicillin 500 mg BID+nas.decong.	74	8.9(2.5)	2.5	7.6	19.0
25 bacampicillin 500 mg TID+nas.decong.	74	12.5(5.0)	8.8	10.0	31.3
26 erythromycin base+nas.decong.	50	2	20(2)	10	38.0
27 penicillin V potass.+nas.decong.	50	4(2)	2	12	20.0

[1]) Penicillin dosage 0.4 g TID.
[2]) Penicillin dosage 1.2 g TID.

results. Thus, the recovery of the maxillary sinusitis can be expressed as the improvement of the radiological point score.

The cure course of all 2039 maxillary sinuses and its P95 confidence limits are seen in Figure 1. Regardless of the principal type of treatment, the therapeutic results were fairly similar. The most significant difference demonstrated was for nasal decongestants alone (Treatment No. 1, Table I) which appeared to be insufficient for the treatment outcome (the patients in this test were followed for ten days only). Phenylpropanolamine, an oral sympaticomimetic agent (Treatment No. 22, Table I), was also less favourable than average, but the difference here was small, and it appeared to be more favourable than the nasal decongestant applied topically.

Some treatment modes were particularly beneficial initially, while other groups were slightly more improved after 10 and 15 days. However, the general impression is that the therapeutic outcome differs very little among the groups.

SIDE EFFECTS

Side effects of the different treatment modes used in our studies were mostly due to the various antibiotic treatments. In Table I, the side effects and complaints reported by the patients are listed in three main groups: skin reactions (rash, urticaria, prurigus), upper gastro-intestinal disturbances (gastritis, epigastric pains, nausea, etc.) and lower gastro-intestinal disturbances (diarrhoea, loose stools, etc.), these being the most common adverse reactions reported from antibiotic treatment. In most treatment groups other complaints were registered as well, but these were usually mild or not distinctly attributed to the treatment given. Lower gastro-intestinal disturbances dominated among the complaints, and in all, lincomycin presented the highest side effect score (67.5%), due entirely to loose stools which, though, "were not regarded as uncomfortable". Among other side effects, bacampicillin 500 mg TID gave urticaria and rash in 12.5% of all cases (8.9% after 500 mg BID), and erythromycin base was the dominating treatment giving upper gastro-intestinal disturbances (epigastric pain, 20%).

BACTERIOLOGY

Twenty-six per-cent of all patients had at least one completely opaque maxillary sinus, and in these sinuses secretion was verified by aspiration. Bacteriological cultures were made from specimens taken by aspiration in these cases, as well as in treatment failure cases.

The bacteriological findings from the first two studies (Axelsson and Brorson, 1972) can be compared with those from the last two studies (von Sydow et al., 1981; '82): pneumococci and Haemophilus influenzae seem to have become more frequently associated with acute maxillary sinusitis, being found in 21.9% and 12.7%, respectively, in the earlier studies but in 35.8% and 26.9%, respective-

ly, in the latest ones.
On the other hand, there was no change in the frequency of Branhamella catarrhalis (Neisseria) findings (3.4% and 3.0%), anaerobic flora (4.8% and 4.5%) or of negative cultures (21.6% and 21.9%).

ZUSAMMENFASSUNG

Die Maxillarsinusitis sollte differenzialdiagnostisch von der Rhinitis getrennt werden, da die Behandlung unterschiedlich ist. Zu diesem Zweck ist die Röntgenuntersuchung eine einfache und objektive Methode, die die klinische Untersuchung ergänzt. Besondere Aufmerksamkeit sollte dem Nachweiss von Sekret in der Nebenhöhle gewidmet werden - unserer Meinung nach eines der Hauptkriterien der Sinusitdiagnostik. Eine dafür passende Modifikation der üblichen Röntgenmethode wird präsentiert.
Der therapeutische Effekt von 27 verschiedenen Behandlungsmethoden bei 1320 Fällen von akuter Kieferhöhlenentzündung wurde verglichen. Das Resultat der Behandlung wurde sowohl klinisch wie röntgenologisch analysiert. Während Zahl und Art von Nebenwirkungen variierte, war der Unterschied betreffs therapeutischem Effekt zwischen den 27 Behandlungsgruppen gering, unabhängig davon ob nur Spüling, Antibioticabehandlung oder eine Kombination beider Behandlungen durchgeführt wurden.
Bei der Wahl der Behandlungsform sollte deshalb Rücksicht genommen werden auf andere Faktoren als nur therapeutische, wie z.B. Pharmacokinese, Administrationsform, Dosis und Kosten, wie auch Art und Frequenz von Nebenwirkungen.

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