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Acute maxillary sinusitis in general practice: a decision problem

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Objective – This paper describes a qualitative analysis of a decision problem of acute maxillary sinusitis in general practice. The criteria and expected outcomes on which general practitioners (GPs) base their choice of a management strategy are presented.

Design – Structured open-ended interviews, all done by the first author, were transcribed, and summarized for each management strategy. These summaries were sent back to the experts for verification.

Participants – Eight expert GPs from The Netherlands participated; all had been practising for at least three years, and had conducted postgraduate research into upper respiratory tract infections.

Results – There was a high degree of consensus among the eight GPs. While most practitioners generally considered the prevention of complications of therapy more important than the prevention of complications of disease, patients at risk (e.g., the elderly, children, patients with other chronic diseases, and patients in weakened condition) of complications of acute sinusitis (e.g., chronic sinusitis) were considered an exception to this rule, possibly because the complications of sinusitis are more serious than those of its therapy. Major differences between the GPs concerned the timing of decisions (e.g. prescribing antibiotics after 5 or 21 days of complaints while local therapy was used).

Conclusion – Although this study gives no answer as to which management strategy is optimal, the results served as a basis in the development of the Dutch “Sinusitis in general practice standard”. In order further to develop the optimal strategy, in future research, the probabilities and weights attached to the criteria and expected outcomes have to be quantified.

Key words: acute sinusitis, general practitioner, management.

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This paper describes a qualitative analysis of a decision problem of acute maxillary sinusitis in general practice. Acute maxillary sinusitis is defined as an acute inflammation of the maxillary sinuses caused by micro-organisms or other influences such as allergens and physical irritation(1). It is a common disease in general practice: in The Netherlands and Great Britain, the

incidence of sinusitis is described as 15 to 23 patients per 1000 per year (2-5).

General practitioners (GPs) have several options in managing acute maxillary sinusitis:

- waiting and providing patients with information;
- prescribing analgesics and/or local therapy (nasal spray);
- prescribing antibiotics;

- performing further examinations (radiography, ultrasonography);
- referral to an ENT-clinic.

In general practice a common strategy in managing acute maxillary sinusitis is prescribing antibiotics. For acute respiratory infections, GPs prescribe antibiotics perhaps too frequently (6-11).

In order to improve prescription behaviour, it is important to know the rationale behind the decision to prescribe (12). This study analyzed the criteria and expected outcomes on which GPs base their choice of a management strategy with regard to patients suspected of acute maxillary sinusitis (13). The aim was to describe the rationale behind the decision to prescribe in order to formulate criteria on which GPs should base their choices between available treatment options.

Method

The GPs

Eight Dutch experts were asked to participate; they all agreed. They were GPs from The Netherlands with special knowledge on the topic of upper respiratory tract infections (Table I). They had conducted postgraduate research in the field of upper respiratory tract infections. On average they had nine years' experience in general practice (SD 5.1; min 3; max 16); their average age was 38 (SD 4.2; min 33; max 45).

Table I: The Research Topics of the Experts.

- Antibiotics prescription in general practice, studied for two years.
- Allergic rhinitis in general practice, studied for five years.
- COPD in general practice, studied for six years.
- Antibiotic prescription in cases of otitis media in general practice, studied for five years.
- Prescribing patient information in cases of upper respiratory infection in general practice, studied for three years.
- Protocol development in cases of upper respiratory infection in general practice, studied for five years.
- Diagnosing sinusitis based on symptoms, studied for five years.
- Protocol development in cases of sinusitis, studied for two years.

The questionnaire

The questionnaire focused on the GPs' criteria and expected outcomes in choosing a management strategy. The GPs were first asked to specify the clinical states they considered of particular concern in choosing a given management strategy. In order to get information about the criteria on which a management strategy was chosen, the direction of the questions is from therapy-choice to patient. This is the reverse from the normal medical procedure. The second question concerned the desired or avoided outcomes with regard to each specific management strategy: e.g., recovery, the occurrence of somatization, medicalization and side-effects.

These two questions were repeated for the five management strategies: 1) waiting and providing patients with information, 2) prescribing analgesics and/or local therapy (nasal spray), 3) prescribing antibiotics, 4) performing further examinations (radiography, ultrasonography), and 5) referral to an ENT-clinic.

The research procedure

The questionnaire was sent to the participating GPs in advance, so they could prepare for the interview (14). The GPs were interviewed by the first author by means of a structured interview. The questions were open-ended. The interviews were recorded on tape. In order to structure the inquiry, the questions were written on charts. During the interview, all answers were summarized by the interviewer in order to check the understanding of the answers (15).

The analysis

The answers were transcribed, pooled, and put in summarizing tables for each management strategy in order to cluster the data. This summary was sent back to the experts for verification. Based on this summary, conclusions were drawn (16).

Results

A high degree of agreement was found concerning both the criteria on which choices were based, and the expected outcomes that were considered proper or undesirable. The major differences be-

Table II: In- and exclusion criteria in choosing a management option.

management option	waiting and providing patient information	prescribing analgesics and/or local therapy	prescribing antibiotics	performing further examination	referral to an ENT-clinic
inclusion criteria					
severity of complaints	not severe	severe, esp. pain or blocked up nose	severe	----not applicable----	----not applicable----
duration of complaints	short duration	longer duration	longer duration	longer duration	longer duration
results physical examination	no results	clear picture of sinusitis	clear picture of sinusitis	diagnostic problem	diagnostic problems positive results on further examination
prior treatment	----not applicable----	prior treatment was not effective	prior treatment was not effective in the past antibiotics were effective	prior treatment was not effective	prior treatment was not effective
patient wishes	patient wants this therapy	patient wants this therapy	patient wants this therapy	patient wants further examination	patient wants referral
patient at risk	----not applicable----	----not applicable----	patient has poor general condition patient is at risk for COPD, allergy, sinusitis, etc	----not applicable----	----not applicable----
exclusion criteria					
prior treatment	was not effective	side-effects in the past	side effects in the past	----not applicable----	----not applicable----
patient wishes	patient prefers other treatment	patient prefers other treatment	patient prefers other treatment	patient prefers other treatment	patient prefers other treatment
patient at risk	patient has bad general condition patient is at risk for COPD, allergy, sinusitis, etc	patient is somatizing patient has a right to more therapy	----not applicable----	----not applicable----	----not applicable----

tween the GPs concerned the timing of decisions, especially the duration of the periods of waiting and providing patients with information and prescribing antibiotics. The length of the short-term complaints connected to waiting and providing patients with information varied from one to seven days. The duration of complaints about which they choose to prescribe antibiotics varied from five to 21 days.

The GPs' main criteria for choosing a particular management option were severity and duration of complaints, the results of physical examination, the results of prior treatment, patient's wishes, and patient risk for complications. The main GPs' expected outcomes in choosing a particular management option were recovery or diminishing complaints, the risk or advantages of the treatment, and the complications of the dis-

ease. In the following section these aspects are explained in more detail for each management strategy. Tables II and III contain a presentation of the results. In Figure 1, the results are summarized in a decision structure.

Waiting and providing patients with information

The grounds for choosing this option were short-term complaints (1-7 days; e.g., headache, other sinus-related pain, nasal obstruction, and nearly unaffected general condition) in the absence of pathological results from physical examination. The exceptions were patients at risk (e.g., the elderly, children, patients with other chronic diseases, and patients in weakened condition) of complications of acute sinusitis (e.g., chronic sinusitis) and patients with other preferences. The

Table III: Expectations of a chosen management option.

management option	waiting and providing patient information	prescribing analgesics and/or local therapy	prescribing antibiotics	performing further examination	referral to an ENT- clinic
expected positive outcome					
recovery	spontaneous recovery	(spontaneous) recovery	recovery	----not applicable----	recovery
relief of complaints	subjective relief	(subjective) relief	relief of complaints	----not applicable----	relief of complaints
other advantages of treatment	increase patient's self-management	increase patients' self-management no antibiotics are needed	----not applicable----	diagnostic certainty	optimal diagnosis optimal therapy ENT-doctor can advise GP
feared negative outcome					
risk of treatment	----not applicable----	somatization medicalization side-effects rebound-effect	somatization medicalization side-effects costs	medicalization burden with regard to time, money and X-ray	complications of therapy
complications of disease	chronic sinusitis	----not applicable----	preventing complication	----not applicable----	----not applicable----
other disadvantages of treatment	no active therapy	therapy is symptomatic	----not applicable----	little diagnostic information	patient is lost to GP follow-up care

expectation of the GPs was that the disease would be self-limiting.

Prescribing analgesics and/or local therapy

The GPs' reasons for prescribing analgesics and/or local therapy (nasal spray) were more severe complaints, with longer duration, in combination with pathological results on physical examination (e.g., severe pain, severe nasal obstruction, and fever). This management option was considered unfit for patients at risk of complications of acute sinusitis and for patients with other preferences. Their expected outcome was that the patients would be at risk for somatization, medicalization and side-effects (e.g., nasal-spray dependence).

Prescribing antibiotics

The GPs' reasons for prescribing antibiotics were longer duration of the before-mentioned complaints (5-21 days while local therapy was used), severe complaints with pathological results on physical examination (e.g., localized sinus-related pain, purulent rhinorrhoea, mucoid swelling and affected general condition), and a high risk of complications of acute sinusitis. This strategy was considered unsuitable for patients with other preferences.

The desirable potential outcome with regard to this management strategy was recovery, while the risks of somatization, medicalization, and side-effects were considered as the undesirable potential outcome.

Performing further examinations

The main grounds for performing further tests (e.g., radiography, ultrasonography) were continuing complaints (e.g., two prescriptions of antibiotics for sinusitis that had occurred three or four times a year) and diagnostic problems. For patients with other preferences this option was considered unsuitable. The expected outcome mentioned, was that patients undergoing further examination would be at risk of somatization and medicalization.

Referral to an ENT-clinic

The main grounds for referral to an ENT-clinic were continuing complaints and positive results on further tests. This management option was considered unfit for patients with other preferences. The expected outcome was that referred patients were at risk of somatization and medicalization.

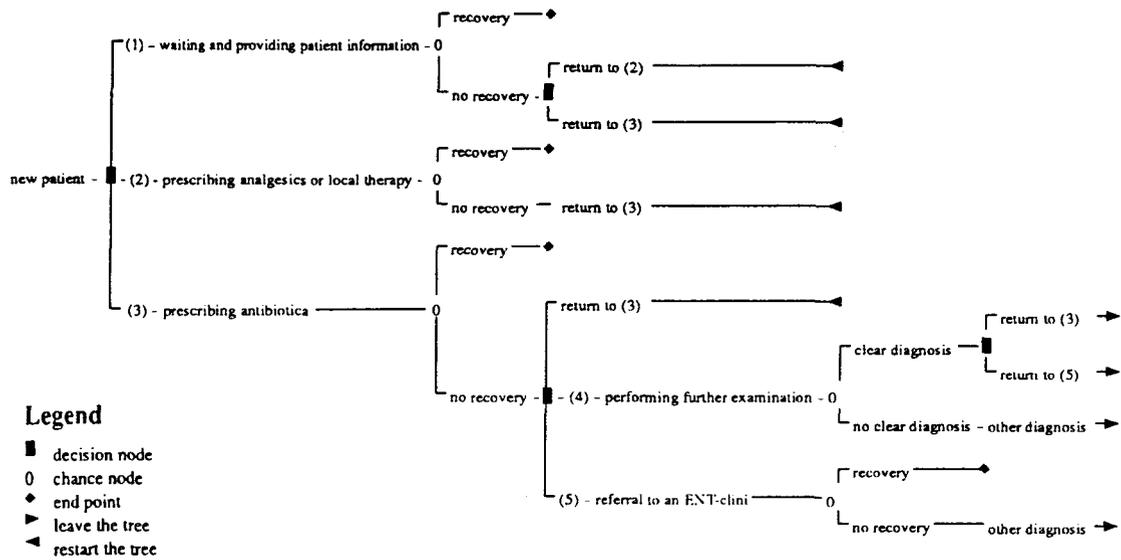


Figure 1: Structure of clinical decisions.

Discussion

In the present study the management of patients suspected of acute maxillary sinusitis in general practice has been reduced into clear components. A remarkably high degree of consensus was found. The eight expert GPs agreed on the arguments for and against each management option, and the expected outcomes. Although they did not mention all arguments, all criteria and expectations were acceptable to them.

With respect to the disagreements in the timing of decision, the uncertainty of the diagnosis might be an important reason (17), and the uncertainty of the effectiveness of antibiotics might also play a role. Waiting while providing patients with information and prescribing analgesics and/or prescribing local therapy (nasal spray) were important management options. Performing further tests (e.g., radiography, ultrasonography) and deciding to refer the patient to an ENT-clinic were mentioned only when there were diagnostic or therapeutic problems.

The expert GPs regarded the complications of therapy as a more serious consideration than the complications of disease. This judgment is strik-

ing in comparison with the literature, in which it is stressed that complications of sinusitis can be associated with significant morbidity and mortality (18-21). A reason for this contrast is that the literature on maxillary sinusitis usually describes a selected patient population, while in general practice the patients suspected of acute maxillary sinusitis come from an unselected population.

In general practice the exceptions are patients at risk of complications of sinusitis. For this patient group, the expert GPs preferred to prescribe antibiotics immediately. For patients at risk, complications of disease seem to carry more weight.

Our study cannot give an answer as to which management strategy is optimal. First, the GPs did not agree on the timing of all decisions (e.g. when to wait and provide patients with information, when to prescribe antibiotics). Second, only eight GPs were interviewed. However, because these GPs are experts, the interviews give an impression of an adequate strategy with regard to managing patients with acute maxillary sinusitis in general practice. The results of these interviews will be used in the formulation of the Dutch College of GP standard for sinusitis in general practice (22,23).

Moreover, this study cannot even give an answer as to which management strategy is common in The Netherlands. Since the interviewed GPs were expert on this topic, the results may not represent regular general practice policies. This study should be considered as a qualitative description of the components of the decision problem as faced by eight expert GPs with regard to patients suspected of acute maxillary sinusitis. This information is important because knowledge of the thinking behind decisions is the basis of real improvement in the quality of prescribing.

In order further to develop an optimal strategy, the probabilities and weights attached to the criteria and expected outcomes will have to be quantified in future research. The GP as a decision maker will be asked to quantify uncertainties and to assess possible outcomes. By making this step, the decision maker will be able to make judgments about which strategy is more likely to result in a favourable outcome (13). Further, we think that the timing of decisions, e.g. prescribing antibiotics, should be an important variable in evaluation studies.

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