

Review: specific signs and symptoms can help practitioners to diagnose acute purulent sinusitis in general practice

Lindbæk M, Hjørt Dahl P. *The clinical diagnosis of acute purulent sinusitis in general practice—a review. Br J Gen Pract* 2002;52:491–5.

QUESTION: What is the accuracy of clinical assessment and close examination of patients in diagnosing purulent sinusitis in general practice?

Data sources

Studies were identified by searching Medline from 1966 to May 2001 using the keywords sinusitis acute, sinus infection, diagnosis, primary care, and general/family practice; and by a manual search of the literature using previous knowledge in the field.

Study selection

Studies were selected if clinical symptoms, signs, and blood tests were compared with an objective diagnostic standard (sinus puncture, computed tomography [CT], x ray, or ultrasonography) for diagnosing adults with suspected acute sinusitis in primary care.

Data extraction

Data were extracted on study quality (using criteria from the Cochrane Collaboration Methods Working Group on Diagnosis and Screening), clinical setting, patient characteristics, and outcomes.

Main results

4 studies met the selection criteria. 4 different diagnostic standards were used in the 4 studies: sinus puncture (optimal diagnostic standard), CT, x ray, and ultrasonography. The study results were not pooled because data from original studies were not available. 4 factors were found to be associated with the diagnosis of purulent sinusitis in ≥ 2 studies: purulent secretion as a symptom and as a sign, pain in the teeth, and elevated erythrocyte sedimentation rate (> 10 mg/l) (table). 7 other factors were found to be associated with the diagnosis of acute purulent sinusitis, but the associations were only found in 1 study (table).

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Symptoms, signs, and blood tests independently associated with a confirmed diagnosis of acute sinusitis*

Symptom, sign, or blood test (number of studies investigating item)	Number of studies finding an association	+LR
Symptoms		
Purulent rhinorrhoea (4)	3	1.5, 1.5, 1.9
Pain in teeth (4)	2	2.1, 2.5
Beginning with common cold (4)	1	1.4
Unilateral maxillary pain (4)	1	1.8
2 phases in the illness history (1)	1	2.1
Lack of response to nasal decongestants (1)	1	2.1
Signs		
Purulent secretion in nasal cavity (4)	2	2.1, 5.5
Pain at bending forward (4)	1	1.6
Transillumination of sinus (1)	1	1.6
Blood Tests		
Elevated erythrocyte sedimentation rate, >10 mm/h for males and >20 mm/h for females (2)	2	1.7, 2.9
Increased C-reactive protein, >10 mg/l (2)	1	1.8

*+LR = positive likelihood ratio; defined in glossary

Conclusion

Specific signs and symptoms can help practitioners to diagnose acute purulent sinusitis in a general practice population.

COMMENTARY

Acute sinusitis is associated with substantial expenditures on antibiotics.¹ Because of increasing antibiotic resistance, there is pressure for accurate diagnosis to prevent inappropriate prescribing. Whether the review by Lindbæk and Hjørt Dahl provides such information is moot. Firstly, their search strategy was restricted to Medline and to English language studies. The authors suggest that they were unlikely to find any other studies because 2 other recent reviews had not.^{2–3} However, these reviews were also language restricted, 1 to English and the other to Northern European languages. Indeed, 1 of the previous reviews identified 2 English language reports in general practice populations that were not used by Lindbæk and Hjørt Dahl.² Secondly, the review does not report the processes used to minimise bias during data extraction, which introduces another uncertainty as there is a discrepancy between the description of characteristics of 1 study included in this and an earlier review. Thirdly, although the authors provide useful information about the association of purulent rhinorrhoea, pain in teeth, and elevated erythrocyte sedimentation rate with the diagnosis of purulent sinusitis, they only report positive likelihood ratios (+LRs). A negative likelihood ratio helps to reveal the probability of a false negative, giving information on how good a sign is at excluding patients without the condition. +LRs are only half the picture.

What does this review contribute to clinical practice? A 1999 systematic review found that antibiotic treatment is more effective than placebo for treating acute maxillary sinusitis, and that the penicillins are as effective as modern antibiotics.⁴ However, 62% of the placebo group improved or healed, which lead the Cochrane Consumer Network to conclude that antibiotics may help some patients, but will not make a major difference to most. Delayed prescription may be an option for both diagnosis and treatment.

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- 4 Williams JW Jr, Aguilar C, Makela M, et al. Antibiotics for acute maxillary sinusitis. *Cochrane Database Sys Rev* 2000;(2):CD000243.