

Just the Berries

Clinical diagnosis of acute sinusitis in adults

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Family physicians frequently see patients who complain of sinusitis. These patients usually present with symptoms that include preceding upper respiratory tract infection, mucopurulent rhinorrhea, postnasal drip, cough, fever, nausea, and congestion. Facial pain above or below the eyes that increases on leaning forward is common. The nasal airway is often reduced and the mucosa hyperemic with purulent secretions drying to form crusts. These patients look for and often receive antibiotics to manage their symptoms. In fact, 16% of all antibiotics prescribed for adults in Danish general practice are for acute maxillary sinusitis.¹

Because the condition is common and antibiotics are often prescribed, it is important to make as accurate a diagnosis as possible. In an attempt to define the clinical criteria necessary for diagnosis, I searched MEDLINE up to 1996 using the word "sinusitis," checked the Cochrane Library, and looked at the Bandolier evidence-based medicine site.

It is apparent from the literature that, using strictly clinical criteria, acute maxillary sinusitis is overdiagnosed in general practice. In one study,² only 53% of patients suspected of having acute maxillary sinusitis had purulence or mucopurulence in sinus aspirate (level 1 evidence). The same study showed that none of the generally accepted symptoms and signs were independently associated with diagnosis of acute maxillary sinusitis.

Although maxillary pain was the most common symptom, only unilateral pain and maxillary toothache were significantly associated

with pus in sinus aspirate. The only sign that showed significant association was unilateral tenderness of the maxillary sinus. A raised erythrocyte sedimentation rate (ESR) ($P.01$) and raised C-reactive protein ($P.007$), however, were independently associated with diagnosis of acute maxillary sinusitis.

We should not feel too badly about our diagnostic skills, though. Sinusitis was diagnosed in 70% of the patients by computed tomography, but only 53% had purulence or mucopurulence on puncture.

Lindboek et al³ compared diagnosis of sinusitis by clinical signs and symptoms with diagnosis by CT. They found that the condition was overdiagnosed, but when they subjected all their signs, symptoms, and test results to regression analysis, they found the following four were significantly associated with infection (level 1 evidence):

- purulent secretion in cavum nasi,
- purulent rhinorrhea,
- double sickening (two phases in the illness history), and
- erythrocyte sedimentation rate >10 mm/h.

Likelihood ratios calculated for the presence of 0, 1, 2, 3, or 4 of these signs and symptoms in 199 of the 201 patients in the study are shown in **Table 1**. The findings are in agreement with a meta-analysis done by Engels et al,⁴ which sug-

gested that clinical evaluations (especially risk scores) provide useful information for diagnosing sinusitis (level 1 evidence).

The Canadian Medical Association (CMA) Consensus Guideline on Diagnosis of Acute Sinusitis⁵ also used logistic regression analysis to define

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Table 1. Likelihood ratios for presence of signs and symptoms of acute sinusitis

NO. OF SIGNS AND SYMPTOMS	SINUSITIS PRESENT	SINUSITIS ABSENT	LIKELIHOOD RATIO
4	43	1	25.2
3	41	13	1.8
2	32	23	0.8
1	8	22	0.2
0	2	14	0.1
TOTAL	126	73	

Data from Lindboek et al.³

combinations of signs and symptoms that can be used to predict sinusitis.⁶ A four-view radiographic series served as the criterion standard in this study. Three symptoms (maxillary toothache, poor response to decongestants, and history of coloured nasal discharge) and two signs (purulent nasal secretion and abnormal transillumination results) were found to be the best predictors of sinusitis. When none of these signs or symptoms were found, sinusitis could be ruled out; however, when four or more were present, the likelihood ratio was 6.4.

It appears that, although there is no one major indicator of sinusitis, a combination of indicators will let family physicians be reasonably sure of the diagnosis. The CMA made the following recommendations: they will form the basis for my future diagnosis of sinusitis.

Recommendations

- Sinus puncture with aspiration and culture of sinus secretions remains the criterion standard for diagnosis. This technique, however, is invasive and impractical in most situations (level 1 evidence). Nasal cultures have been shown not to correlate well with infecting organisms in sinuses.
- No single clinical finding is predictive of acute sinusitis (level 1 evidence).
- Three symptoms (maxillary toothache, poor response to decongestants, and history of coloured nasal discharge) and two signs (purulent nasal secretion and abnormal transillumination) are the best clinical predictors of acute sinusitis (level 1 evidence).

- When fewer than two of the above signs or symptoms are present, acute sinusitis can be ruled out (level 1 evidence).
- Diagnosis of acute sinusitis might be unclear in patients with two or three of the above signs and symptoms. For these patients, sinus radiography would be helpful (level 3 evidence). The absolute usefulness of diagnostic imaging is when tests are negative, which means there is no sinusitis. Positive radiographic test results reported by a radiologist in isolation are of no clinical value and, in fact, often start physicians down the wrong road of repeated antibiotic therapy.
- When four or more signs and symptoms are present, patients are highly likely to have acute sinusitis (level 1 evidence). ❖

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