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REFERENCE

DEFINITION OF RHINOSINUSITIS AND NASAL POLYPS

Clinical definition

Rhinosinusitis (including nasal polyps) is defined as:
• inflammation of the nose and the paranasal sinuses characterised by two or more symptoms, one of which should be either nasal blockage/obstruction/congestion or nasal discharge (anterior/posterior nasal drip):
  ± facial pain/pressure
  ± reduction or loss of smell
and either
• endoscopic signs of:
  - polyps and/or
  - mucopurulent discharge primarily from middle meatus and/or
  - oedema/mucosal obstruction primarily in middle meatus
and/or
• CT changes:
  - mucosal changes within the ostiomeatal complex and/or sinuses

Severity of the disease

The disease can be divided into MILD, MODERATE and SEVERE based on total severity visual analogue scale (VAS) score (0-10 cm):
- MILD = VAS 0-3
- MODERATE = VAS >3-7
- SEVERE = VAS >7-10

To evaluate the total severity, the patient is asked to indicate on a VAS the answer to the question:

HOW TROUBLESOME ARE YOUR SYMPTOMS OF RHINOSINUSITIS?

A VAS >5 affects patient QOL

Duration of the disease

Acute
<12 weeks complete resolution of symptoms
Chronic
>12 weeks symptoms without complete resolution of symptoms
  • may also be subject to exacerbations

OBJECTIVES & AIMS

Rhinosinusitis is a significant and increasing health problem which results in a large financial burden on society. This pocket guide offers evidence-based recommendations on its diagnosis and treatment.

The full document on which this is based is intended to be a state-of-the-art review for the specialist as well as for the general practitioner:
• to update their knowledge of rhinosinusitis and nasal polyposis
• to provide an evidence-based documented review of the diagnostic methods
• to provide an evidence-based review of the available treatments
• to propose a stepwise approach to the management of the disease
• to propose guidance for definitions and outcome measurements in research in different settings

CATEGORY OF EVIDENCE

Ia evidence from meta-analysis of randomised controlled trials
Ib evidence from at least one randomised controlled trial
IIa evidence from at least one controlled study without randomisation
IIb evidence from at least one other type of quasi-experimental study
III evidence from non-experimental descriptive studies, such as comparative studies, correlation studies, and case-control studies
IV evidence from expert committee reports or opinions or clinical experience of respected authorities, or both

STRENGTH OF RECOMMENDATION

A directly based on category I evidence
B directly based on category II evidence or extrapolated recommendation from category I evidence
C directly based on category III evidence or extrapolated recommendation from category I or II evidence
D directly based on category IV evidence or extrapolated recommendation from category I, II or III evidence
Evidence-based management scheme for adults with acute rhinosinusitis

Table 1. Treatment evidence and recommendations for adults with acute rhinosinusitis

<table>
<thead>
<tr>
<th>Therapy</th>
<th>Grade of Therapy</th>
<th>Level</th>
<th>Grade of Recommendation</th>
<th>Relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>oral antibiotic</td>
<td></td>
<td>Ia</td>
<td>A</td>
<td>yes, after 5 days, or in severe cases</td>
</tr>
<tr>
<td>topical corticosteroid</td>
<td></td>
<td>Ib</td>
<td>A</td>
<td>yes</td>
</tr>
<tr>
<td>topical steroid and oral antibiotic combined</td>
<td></td>
<td>Ib</td>
<td>A</td>
<td>yes</td>
</tr>
<tr>
<td>oral corticosteroid</td>
<td></td>
<td>Ib</td>
<td>A</td>
<td>yes, reduces pain in severe disease</td>
</tr>
<tr>
<td>oral antihistamine</td>
<td></td>
<td>Ib</td>
<td>B</td>
<td>yes, only in allergic patients</td>
</tr>
<tr>
<td>nasal douche</td>
<td></td>
<td>Ib (-)</td>
<td>D</td>
<td>no</td>
</tr>
<tr>
<td>decongestant</td>
<td></td>
<td>Ib (-)</td>
<td>D</td>
<td>yes, as symptomatic relief</td>
</tr>
<tr>
<td>mucolytics</td>
<td></td>
<td>none</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>phytotherapy</td>
<td></td>
<td>Ib</td>
<td>D</td>
<td>no</td>
</tr>
</tbody>
</table>

Ib (-): study with a negative outcome

Evidence-based management scheme for adults with acute rhinosinusitis for primary care and non-ENT specialists

Diagnosis

Symptom-based, no need for imaging (plain x-ray not recommended)

Symptoms for less than 12 weeks:

Sudden onset of two or more symptoms, one of which should be either nasal blockage/obstruction/congestion or nasal discharge (anterior/posterior nasal drip):

± facial pain/pressure
± reduction/loss of smell

with symptom free intervals if the problem is recurrent

with validation by telephone or interview asking questions on allergic symptoms, ie, sneezing, watery rhinorrhea, nasal itching and itchy watery eyes

Common cold/acute viral rhinosinusitis is defined as:
duration of symptoms for <10 days

Acute non-viral rhinosinusitis is defined as:
increase of symptoms after 5 days or persistent symptoms after 10 days with <12 weeks duration

Figure 1. Management scheme for primary care for adults with acute rhinosinusitis

At any point immediate referral/hospitalisation

• Periorbital oedema
• Displaced globe
• Double vision
• Ophthalmoplegia
• Reduced visual acuity
• Severe unilateral or bilateral frontal headache
• Frontal swelling
• Signs of meningitis or focal neurologic signs

*Sudden onset of two or more symptoms, one of which should be either nasal blockage/obstruction/congestion or nasal discharge: anterior/posterior nasal drip:
± facial pain/pressure,
± reduction or loss of smell;
examination: anterior rhinoscopy
X-ray/CT not recommended

Symptoms less than 5 days
or improving thereafter
At any point immediate referral/hospitalisation

• Periorbital oedema
• Displaced globe
• Double vision
• Ophthalmoplegia
• Reduced visual acuity
• Severe unilateral or bilateral frontal headache
• Frontal swelling
• Signs of meningitis or focal neurologic signs

Common cold

Moderate

Severe*

Symptoms persisting or increasing after 5 days

Antibiotics
topical steroids

No improvement after 14 days of treatment

Effect in 48 h

No effect in 48 h

Consider referral to specialist

Continue treatment for 7 - 14 days

Refer to specialist

*Fever >38°C, severe pain
**Evidence-based management scheme for adults with acute rhinosinusitis**

### Table 1. Treatment evidence and recommendations for adults with acute rhinosinusitis

<table>
<thead>
<tr>
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<th>Level</th>
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<td>oral antibiotic</td>
<td>Ia</td>
<td>A</td>
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<tr>
<td>topical corticosteroid</td>
<td>Ib</td>
<td>A</td>
<td>yes</td>
</tr>
<tr>
<td>topical steroid and oral antibiotic combined</td>
<td>Ib</td>
<td>A</td>
<td>yes</td>
</tr>
<tr>
<td>oral corticosteroid</td>
<td>Ib</td>
<td>A</td>
<td>yes, reduces pain in severe disease</td>
</tr>
<tr>
<td>oral antihistamine</td>
<td>Ib</td>
<td>B</td>
<td>yes, only in allergic patients</td>
</tr>
<tr>
<td>nasal douche</td>
<td>Ib (-)</td>
<td>D</td>
<td>no</td>
</tr>
<tr>
<td>decongestant</td>
<td>Ib (-)</td>
<td>D</td>
<td>yes, as symptomatic relief</td>
</tr>
<tr>
<td>mucolytics</td>
<td>none</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>phytotherapy</td>
<td>Ib</td>
<td>D</td>
<td>no</td>
</tr>
</tbody>
</table>

Ib (-): study with a negative outcome

**Evidence-based management scheme for adults with acute rhinosinusitis for ENT specialists**

### Diagnosis

#### Symptoms

Sudden onset of two or more symptoms, one of which should be either nasal blockage/obstruction/congestion or nasal discharge (anterior/posterior nasal drip):

- ± facial pain/pressure
- ± reduction/loss of smell

#### Examination

- nasal examination (swelling, redness, pus)
- oral examination: posterior discharge
- exclude dental infection

ENT examination including nasal endoscopy

### Imaging

(Plain x-ray **not** recommended)

CT scan is also **not** recommended unless additional problems such as:

- very severe disease
- immunocompromised patients
- signs of complications

### Figure 2. Management scheme for ENT specialists for adults with acute rhinosinusitis

Referral from primary care

- Moderate symptoms no improvement after 14 days of treatment
  - Reconsider diagnosis
  - Nasal endoscopy
  - Consider imaging
  - Consider culture
  - Oral antibiotics
  - Treatment according to diagnosis

- Severe symptoms no improvement after 48 hours of treatment
  - Consider hospitalisation
  - Nasal endoscopy
  - Culture
  - Imaging
  - Consider IV antibiotics
  - Consider oral steroids
  - Consider surgery

- Complications
  - Hospitalisation
  - Nasal endoscopy
  - Culture
  - Imaging
  - IV antibiotics
  - and/or surgery
**Evidence-based management scheme for adults with chronic rhinosinusitis without and with nasal polyps**

Table 2. Treatment evidence and recommendations for adults with chronic rhinosinusitis without nasal polyps

<table>
<thead>
<tr>
<th>Therapy</th>
<th>Grade of Therapy</th>
<th>Level</th>
<th>Grade of Recommendation</th>
<th>Relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>oral antibiotic therapy short term &lt;2 weeks</td>
<td>Ib (-)</td>
<td>C</td>
<td>( )</td>
<td>no</td>
</tr>
<tr>
<td>oral antibiotic therapy long term &gt;12 weeks</td>
<td>Ib</td>
<td>A</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>antibiotics – topical</td>
<td>III</td>
<td>D</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>steroid – topical</td>
<td>Ib</td>
<td>A</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>steroid – oral</td>
<td>no data</td>
<td>D</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>nasal saline douche</td>
<td>Ib</td>
<td>A</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>decongestant oral/topical</td>
<td>no data</td>
<td>D</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>mucolytics</td>
<td>III</td>
<td>C</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>antimycotics – systemic</td>
<td>Ib (-)</td>
<td>D</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>antimycotics – topical</td>
<td>Ib (-)</td>
<td>D</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>oral antihistamine in allergic patients</td>
<td>no data</td>
<td>D</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>proton pump inhibitors</td>
<td>no data</td>
<td>D</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>bacterial lysates</td>
<td>Ib</td>
<td>A</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>immunomodulators</td>
<td>Ib (-)</td>
<td>D</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>phytotherapy</td>
<td>Ib (-)</td>
<td>D</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>anti-leukotrienes</td>
<td>III</td>
<td>C</td>
<td>no</td>
<td></td>
</tr>
</tbody>
</table>

* Some of these studies also included patients with CRS with nasal polyps

Ib (-): study with a negative outcome

---

**Evidence-based management scheme for adults with CRS with or without NP for primary care and non-ENT specialists**

**Diagnosis**

Symptoms present longer than 12 weeks

Two or more symptoms, one of which should be either nasal blockage/obstruction/congestion or nasal discharge (anterior/posterior nasal drip):

- ± facial pain/pressure
- ± reduction or loss of smell

with validation by telephone or interview asking questions on allergic symptoms ie, sneezing, watery rhinorrhea, nasal itching and itchy watery eyes. If positive, allergy testing should be performed (Plain x-ray or CT scan not recommended)

![Figure 3. Chronic rhinosinusitis with or without nasal polyps management scheme for primary care and non-ENT specialists (CRS/NP)](image)

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**Acute exacerbations of CRS should be treated like acute rhinosinusitis**
**Evidence-based surgery for rhinosinusitis**

It is difficult to generalise about sinus surgery studies because surgery is indicated in selected patients who are not sufficiently responsive to medical treatment. There are specific problems in conducting surgical trials as surgery is difficult to estimate or standardise, particularly in multi-centre trials, and the type of treatment is difficult to conceal (blinding). Randomization may pose ethical problems unless narrow inclusion criteria are set and it is difficult to obtain homogenous patient groups with comparable therapeutic procedures for unbiased evaluation of sinus surgery outcomes. Notwithstanding this:

1. In acute rhinosinusitis, surgery is reserved for the most serious cases and their associated complications.
2. More than a hundred reviewed case series (level IV) with highly consistent results suggesting that patients with CRS with and without polyps benefit from sinus surgery.
3. Major complications occur in less than 1%, and revision surgery is performed in approximately 10% within 3 years.
4. In the majority of CRS patients, appropriate medical treatment as as effective as surgery, so sinus surgery should be reserved for patients who do not satisfactorily respond to medical treatment (level 1b).
5. Functional endoscopic surgery is superior to minimal conventional procedures including polypectomy and antral irrigations (Level Ib), but superiority to inferior meatal antrostomy or conventional sphenoidectomy is not yet proven.
6. In CRS patients not previously operated, extended surgery does not yield better results than limited surgical procedures (Level Ib). Although not evidence-based, the extent of surgery is frequently tailored to the extent of disease, which appears to be a reasonable approach. In primary paranasal surgery, surgical conservatism is recommended.
7. Revision endonasal sinus surgery is only indicated if medical treatment is not sufficiently effective. Substantial symptomatic improvement is generally observed in both CRS with and without polyps, though the improvement is somewhat less than after primary surgery. Complication rates and particularly the risk of disease recurrence are higher than after primary surgery.

**Evidence-based management scheme for adults with CRS without NP for ENT specialists**

**Diagnosis**

**Symptoms present longer than 12 weeks**

Two or more symptoms, one of which should be either nasal blockage/obstruction/congestion or nasal discharge (anterior/posterior nasal drip):

- facial pain/pressure
- reduction or loss of smell

**Examination**

Nasal endoscopy - no visible polyps in middle meatus, if necessary following decongestant. (This definition accepts that there is a spectrum of disease in CRS which includes polypoid change in the sinuses and/or middle meatus but excludes those with polypoid disease presenting in the nasal cavity to avoid overlap)

- review primary care physician’s diagnosis and treatment
- questionnaire for allergy and if positive, allergy testing if it has not already been done

**Treatment should be based on severity of symptoms**

- Decide on severity of symptomatology using VAS

**Figure 4. Management scheme for ENT specialists for adults with CRS without nasal polyps**

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasal blockage/obstruction or discoloured discharge</td>
<td>Topical steroids nasal douching/lavage</td>
</tr>
<tr>
<td>Frontal pain, headache</td>
<td>Failure after 3 months</td>
</tr>
<tr>
<td>Smell disturbance</td>
<td>Topical steroids nasal douching culture long-term macrolides</td>
</tr>
<tr>
<td>ENT examination including endoscopy</td>
<td>Failure after 3 months</td>
</tr>
<tr>
<td>Check for allergy</td>
<td>CT scan</td>
</tr>
<tr>
<td>Consider diagnosis and treatment of co-morbidities, eg, asthma</td>
<td>Surgery</td>
</tr>
<tr>
<td>Consider other diagnosis</td>
<td>Unilateral symptoms</td>
</tr>
<tr>
<td>Bleeding</td>
<td>Crusting</td>
</tr>
<tr>
<td>Cacosmia</td>
<td>Orbital symptoms:</td>
</tr>
<tr>
<td>Periorbital oedema</td>
<td>Displaced globe</td>
</tr>
<tr>
<td>Double or reduced vision</td>
<td>Ophthalmoplegia</td>
</tr>
<tr>
<td>Severe frontal headache</td>
<td>Signs of meningitis or focal neurological signs</td>
</tr>
<tr>
<td>Frontal swelling</td>
<td>Urgent investigation and intervention</td>
</tr>
</tbody>
</table>
### Table 3. Treatment evidence and recommendations for adults with chronic rhinosinusitis with nasal polyps

<table>
<thead>
<tr>
<th>Therapy</th>
<th>Level</th>
<th>Grade of Recommendation</th>
<th>Relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>oral antibiotics short term &lt;2 weeks</td>
<td>no data</td>
<td>D</td>
<td>no</td>
</tr>
<tr>
<td>oral antibiotic long term &gt;12 weeks</td>
<td>no data</td>
<td>D</td>
<td>yes, for late relapse</td>
</tr>
<tr>
<td>topical antibiotics</td>
<td>no data</td>
<td>D</td>
<td>no</td>
</tr>
<tr>
<td>topical steroids</td>
<td>Ib</td>
<td>A</td>
<td>yes</td>
</tr>
<tr>
<td>oral steroids</td>
<td>Ib</td>
<td>A</td>
<td>yes</td>
</tr>
<tr>
<td>nasal douche</td>
<td>Ib no data in single use</td>
<td>A</td>
<td>yes, for symptomatic relief</td>
</tr>
<tr>
<td>decongestant topical/oral</td>
<td>no data in single use</td>
<td>D</td>
<td>no</td>
</tr>
<tr>
<td>mucolitics</td>
<td>no data</td>
<td>D</td>
<td>no</td>
</tr>
<tr>
<td>antimycotics – systemic</td>
<td>Ib (-)</td>
<td>D</td>
<td>no</td>
</tr>
<tr>
<td>antimycotics – topical</td>
<td>Ib (-)</td>
<td>A</td>
<td>no</td>
</tr>
<tr>
<td>oral antihistamine in allergic patients</td>
<td>Ib (1)</td>
<td>A</td>
<td>yes, in allergy</td>
</tr>
<tr>
<td>capsaicin</td>
<td>II</td>
<td>B</td>
<td>no</td>
</tr>
<tr>
<td>proton pump inhibitors</td>
<td>II</td>
<td>C</td>
<td>no</td>
</tr>
<tr>
<td>immunomodulators</td>
<td>no data</td>
<td>D</td>
<td>no</td>
</tr>
<tr>
<td>phytotherapy</td>
<td>no data</td>
<td>D</td>
<td>no</td>
</tr>
<tr>
<td>anti-leukotrienes</td>
<td>III</td>
<td>C</td>
<td>no</td>
</tr>
</tbody>
</table>

* Some of these studies also included patients with CRS without nasal polyps

Ib (-) : study with a negative outcome

---

### Evidence-based management scheme for adults with CRS with NP for ENT specialists

#### Diagnosis

**Symptoms present longer than 12 weeks**

- Two or more symptoms, one of which should be either nasal blockage/obstruction/congestion or nasal discharge (anterior/posterior nasal drip)
  - ± facial pain/pressure
  - ± reduction or loss of smell

#### Examination

- Nasal endoscopy - polyps bilateral, endoscopically visualised in middle meatus
  - review primary care physician's diagnosis and treatment
  - questionnaire for allergy and if positive, allergy testing if not already done

#### Severity of the symptoms

- (following the VAS score for the total severity) mild/moderate/severe.

#### Figure 5. Management scheme for ENT specialists for adults with CRS with nasal polyps

- Two symptoms: one of which should be nasal obstruction or discoloured discharge
  - ± frontal pain, headache
  - ± smell disturbance

- ENT examination including endoscopy (size of polyps)
  - Consider CT scan
  - Consider diagnosis and treatment of co-morbidities; eg. ASA

- Consider other diagnosis
  - Unilateral symptoms
  - Bleeding
  - Cataract
  - Carcinoma
  - Orbital symptoms: Periorbital oedema
  - Displaced globe
  - Double or reduced vision
  - Ophthalmoplegia
  - Severe frontal headache
  - Frontal swelling
  - Signs of meningitis or focal neurological signs

- Urgent investigation and intervention

- Follow up douching topical ± oral steroids ± long-term antibiotics

- Oral steroids: (short course) topical steroids

- Review after 1 month

- Improvement

- No improvement

- CT scan

- Surgery
**EVIDENCE-BASED SCHEMES FOR THERAPY IN CHILDREN**

The following scheme should help different disciplines in the treatment of rhinosinusitis in children. The recommendations are based on the available evidence, but the choices need to be made depending on the circumstances of the individual case.

Table 4. Treatment evidence and recommendations for children with acute rhinosinusitis

<table>
<thead>
<tr>
<th>Therapy</th>
<th>Level</th>
<th>Grade of Recommendation</th>
<th>Relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>oral antibiotic</td>
<td>Ia</td>
<td>A</td>
<td>yes, after 5 days, or in severe cases</td>
</tr>
<tr>
<td>topical corticosteroid</td>
<td>IV</td>
<td>D</td>
<td>yes</td>
</tr>
<tr>
<td>topical steroid on top of oral antibiotic</td>
<td>Ib</td>
<td>A</td>
<td>yes</td>
</tr>
<tr>
<td>topical decongestant</td>
<td>III (-)</td>
<td>C</td>
<td>no</td>
</tr>
<tr>
<td>saline douching</td>
<td>IV</td>
<td>D</td>
<td>yes</td>
</tr>
</tbody>
</table>

### EVIDENCE-BASED MANAGEMENT SCHEME FOR CHILDREN WITH ACUTE RHINOSINUSITIS

#### Diagnosis

**Symptoms**

Sudden onset of two or more symptoms one of which should be either nasal blockage/obstruction/congestion or nasal discharge (anterior/posterior nasal drip):

- ± facial pain/pressure
- ± reduction/loss of smell

**Examination (if applicable)**

- nasal examination (swelling, redness, pus)
- oral examination: posterior discharge
- exclude dental infection
- ENT examination including nasal endoscopy

**Imaging**

(Plain x-ray **not** recommended)

CT scan is also **not** recommended **unless** additional problems such as:

- very severe diseases
- immunocompromised patients
- signs of complications

#### Figure 6. Management scheme for children with acute rhinosinusitis
EVIDENCE-BASED MANAGEMENT SCHEME FOR CHILDREN WITH CHRONIC RHINOSinusITIS

Diagnosis
Symptoms present longer than 12 weeks
Two or more symptoms one of which should be either nasal blockage/obstruction/congestion or nasal discharge (anterior/posterior nasal drip):
± facial pain/pressure
± reduction or loss of smell

Additional diagnostic information
• questions on allergy should be added and, if positive, allergy testing should be performed.
• other predisposing factors should be considered: immune deficiency (innate, acquired, GERD)

Examination (if applicable)
• nasal examination (swelling, redness, pus)
• oral examination: posterior discharge
• exclude dental infection
ENT examination including nasal endoscopy

Imaging
(Plain x-ray not recommended)
CT scan is also not recommended unless additional problems such as:
• very severe diseases
• immunocompromised patients
• signs of complications

Treatment should be based on severity of symptoms

Table 5. Treatment evidence and recommendations for children with chronic rhinosinusitis

<table>
<thead>
<tr>
<th>Therapy</th>
<th>Level</th>
<th>Grade of Recommendation</th>
<th>Relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>oral antibiotic</td>
<td>Ia</td>
<td>A</td>
<td>yes, small effect</td>
</tr>
<tr>
<td>topical corticosteroid</td>
<td>IV</td>
<td>D</td>
<td>yes</td>
</tr>
<tr>
<td>saline douching</td>
<td>III</td>
<td>C</td>
<td>yes</td>
</tr>
<tr>
<td>therapy for gastro-oesophageal reflux</td>
<td>III</td>
<td>C</td>
<td>yes</td>
</tr>
</tbody>
</table>