Gastroesophageal reflux disease (GERD) is a condition of reflux of gastric content into the esophagus, which could create clinical symptoms.

Reflux can occur under normal conditions, usually related to certain conditions, such as lying down after meals, and during vomiting. If reflux occurs, the esophagus would immediately contract to cleanse the lumen from the refluxate, preventing prolonged contact between the refluxate and the esophageal mucosa.

According to the theory of balance (Shay theory), refluxate is an aggressive factor, with acid as its main component, while esophageal motility is a defensive factor, including lower esophageal sphincter tone.

Recurrent gastroesophageal reflux accompanied by disturbed cleansing of the esophageal lumen creates an inflammatory process in the esophageal mucosa. This inflammation creates complaints in the patient in the form of heartburn sensations and regurgitation.

The incidence of GERD in Asia differs from that of Western countries. In Japan, GERD is found at a rate of approximately 2% each day. Complaints of heartburn are usually brought up among those over 40 years of age. Symptoms are usually mild. The most recent data from the United States reported a weekly prevalence of heartburn ranging from 18-42%.

The prevalence of esophagitis in an endoscopic study in Indonesia on 127 patients with dyspepsia was 22.8%, with a milder form in 90% of all cases. Similar data from Japan demonstrated a prevalence rate for esophagitis ranging between 1.29% and 9.96%, with a mild form in 70% of cases. Such low prevalence may be associated to a difference in diet and the number of parietal cells between Asian and Western populations.

*This article has been published in Current Treatment in Internal Medicine*
are heartburn and regurgitation. In addition, atypical symptoms include non-cardiac chest pain, night time coughing and wheezing, hoarseness in the mornings (when waking), sore throat, and dental complaints. GERD symptoms often occur after meals, and often overlap with dyspepsia. Positive clinical symptoms without abnormalities in 24-hour pH are associated with a condition of transient lower esophageal sphincter relaxation (TLOSR). In this case, motility plays a more dominant role in producing symptoms.\cite{1,2,3,7,8}

**DIAGNOSIS**

After typical clinical symptoms are found in an esophagitis reflux, there are several ways to establish a diagnosis. Endoscopic examination is a way to determine esophagitis reflux (Table 1), even though 50-60\% of endoscopic results are negative. Histopathological examination will determine the presence of GERD according to the current classification, which is the Los Angeles classification (Table 1).

### Table 1. Los Angeles Classification

<table>
<thead>
<tr>
<th>Degree of abnormality</th>
<th>Description</th>
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<tbody>
<tr>
<td>A</td>
<td>Changes in the mucosa, at least in the form of mucosal folds with a size of less than 5 mm</td>
</tr>
<tr>
<td>B</td>
<td>At least one or more changes in the mucosa/mucosal fold, with a size of more than 5 mm, but without connection between the crest of one fold to the other</td>
</tr>
<tr>
<td>C</td>
<td>Presence of a connection between the peak of one mucosal fold to the other, without encircling the lumen</td>
</tr>
<tr>
<td>D</td>
<td>Circumferential lesion on the mucosa</td>
</tr>
</tbody>
</table>

Tests that can be performed to establish GERD, as well as several types of mechanism and consequences of GERD can be found in Table 2.\cite{1,7}

Evaluation of the degree of endoscopic abnormality and evaluation of histological finding is crucial. Development of GERD into esophagitis, and then to Barret’s esophagus and carcinoma are conditions that need adequate management.

During evaluation of LEST using manometry, most cases are found to be normal. In a study by Manan and Syafrudin on esophagitis cases, 60\% of the results of LEST evaluation were found to be normal. This demonstrates that esophageal peristaltic function in maintaining lumen cleansing plays an important role.\cite{1,2,8}
**TREATMENT**

GERD treatment can be classified into three types, which are:

1. Supportive
2. Medication
3. Surgery

Supportive therapy is aimed at changing the patient’s lifestyle, particularly avoiding types of foods that have effect of LEST, and the patient’s activity.

Medications can be symptomatic and definitive. Short-term use of antacids can reduce the patient’s complaints.

Reducing refluxate aggressiveness by controlling pH is the treatment of choice. Medications that can be used are anti-acids that function as proton-pump inhibitors, with an optimal dose in the beginning of therapy, and continued at half dosage at subsequent stages. The choice of administering a single or a combination of drugs should be known. Studies demonstrate that the degree of esophageal abnormality greatly determines the therapy of choice.

In the year 1996, AGA conducted a comparison of treatment on various degrees of esophageal abnormality (Table 3). 1,10,11,12,13,14,15,16,17

Medications can be classified as symptomatic and definitive treatment.

The use of antacids as gastric acid neutralizing agents and sucralfate to increase tissue resistance are symptomatic and supportive therapy.

Symptomatic therapy should only be administered for a short period of time. Definitive therapy should be administered for 4 weeks, and maintenance for another 4 weeks.

The most recent method of single-drug treatment is the step down method, which recommends the use of PPI with an initial dose of twice daily for 4 weeks, continued with half the initial dose for 4 weeks.

Clinical trials demonstrate different results for different PPIs. Among first generation PPIs, omeperazole was proven to be more effective than lansoprazole, and pantoperazole.

The most recent second generation PPI, esomeperazole, an isomer of omeperazole, demonstrated a far better result than first generation PPIs in clinical trials. 18

Evaluation of the result of treatment is conducted clinically, and endoscopy is re-conducted to determine clinical improvement objectively.

Even though it is still under debate, eradication of H. pylori infection is considered necessary. 19

The types of medicines that can be used to treat GERD - reflux esophagitis is adjusted to the clinical condition. 1,13

The most recent approach for gastroesophageal reflux – reflux esophagitis is the step down method, using one kind of proton pump inhibitor starting with an initial

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**Table 2. Examinations for GERD**

<table>
<thead>
<tr>
<th>Test for reflux</th>
<th>Test to determine extent of esophageal damage</th>
<th>Test to analyse the pathogenesis of esophagitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper gastrointestinal serial endoscopy</td>
<td>Serial barium meal</td>
<td>Acid clearance test*</td>
</tr>
<tr>
<td>Standard reflux test</td>
<td>Endoscopy of the upper gastrointestinal tract</td>
<td>scintiscan using 99m Tc radionuclide*</td>
</tr>
<tr>
<td>pH monitoring</td>
<td>Esophageal biopsy</td>
<td>Esophageal manometry</td>
</tr>
<tr>
<td>scintiscan using 99m Tc radionuclide</td>
<td>Measurement of difference in esophageal potential</td>
<td>Gastric acid analysis</td>
</tr>
</tbody>
</table>

* = principally investigated procedures

**Figure 2. The types of medicines that can be used to treat GERD- reflux esophagitis**

**Step-Up Approach**

- PPI (std dose)
- H2RA (anti reflux dose)

**ADVANTAGES**

- Cost Saving
- Define lowest effective maintenance dose
- Record of long-term safety

**DISADVANTAGES**

- B.I.D. DOSING
- High initial non responder rate
- Incomplete relief

**Step-Down Approach**

- PPI (std dose)
- H2RA (anti reflux dose)

**ADVANTAGES**

- Q.D. dosing
- High rate of responders
- More complete relief
- Shorter time to symptom control
- Shorter time to lesion healing

**DISADVANTAGES**

- Higher cost
- Unsettled issues of I Long-term safety
Conduct of 1-2 times daily for 4 weeks, depending on the drug, continued by half the initial dose for 4 weeks. If there are clinical symptoms, short-term treatment is administered (Genval, 1999).18

CONCLUSION

1. Gastroesophageal reflux disease is established from clinical signs and symptoms.
2. Abnormalities may take the form of reflux esophagitis to Barret’s esophagus. Similar clinical findings are found in non-erosive gastroesophageal reflux disease.
3. Diagnosis is established by means of endoscopy and histopathology.
4. Treatment consists of supportive, medication, and surgical treatment. Medications using the step down method with proton pump inhibitors initiated with the optimal dose continued by half the dose, with cost-effectiveness in consideration.
5. Evaluation of treatment should be done regularly, bearing in mind that this disease can advance into carcinoma.

REFERENCES

6. Orlando RC. Esophageal Epithelial Defenses Against Acid Injury. Am J Gastroenterol 1994;89/8: 48