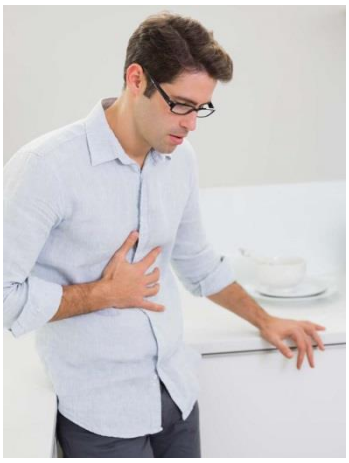
Cancer Association of South Africa (CANSA)

Fact Sheet
on
Atrophic Gastritis

Introduction

Atrophic gastritis (also known as Type A or Type B Gastritis) is a process of chronic inflammation of the stomach mucosa, leading to loss of gastric glandular cells and their eventual replacement by intestinal and fibrous tissues. As a result, the stomach's secretion of essential substances such as hydrochloric acid, pepsin, and intrinsic factor is impaired, leading to digestive problems, Vitamin B_{12} deficiency, leading to megaloblastic anaemia or malabsorption of iron, leading to iron deficiency anaemia. It can be caused by persistent infection with *Helicobacter pylori*, or can be autoimmune in origin.



[Picture Credit: Atrophic Gastritis]

Those with the autoimmune version of atrophic gastritis are statistically more likely to develop gastric carcinoma (stomach cancer), Hashimoto's thyroiditis (an autoimmune disease in which the thyroid gland is attacked by a variety of cells and antibody-mediated immune processes), and achlorhydria (a condition where the production of gastric acid in the stomach is absent or low).

Type A gastritis primarily affects the body/fundus of the stomach, and is more common with pernicious anaemia. Type B gastritis (most common overall) primarily affects the antrum, and is more common with *H. pylori* infection.
(Wikipedia).

Atrophic Gastritis (AG)

Atrophic gastritis (AG) is a histopathologic entity characterised by chronic inflammation of the gastric mucosa with loss of gastric glandular cells and replacement by intestinal-type epithelium, pyloric-type glands, and fibrous tissue. Atrophy (wasting away, especially as a result of the degeneration of cells) of the gastric mucosa is the endpoint of chronic processes, such as chronic gastritis associated with *Helicobacter pylori* infection, other unidentified environmental factors, and autoimmunity directed against gastric glandular cells.

Researched and Authored by Prof Michael C Herbst
[D Litt et Phil (Health Studies); D N Ed; M Art et Scien; B A Cur; Dip Occupational Health; Dip Genetic Counselling; Diagnostic Radiographer; Dip Audiometry and Noise Measurement]
Approved for Distribution by Ms Elize Joubert, Acting CEO
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The two main causes of atrophic gastritis result in distinct topographic types of gastritis, which can be distinguished histologically. *H pylori*- associated atrophic gastritis is usually a multifocal process that involves both the antrum and oxyntic mucosa of the gastric corpus and fundus, whereas autoimmune gastritis essentially is restricted to the gastric corpus and fundus. Individuals with autoimmune gastritis may develop pernicious anaemia because of extensive loss of parietal cell mass and anti-intrinsic factor antibodies.

H pylori- associated atrophic gastritis is frequently asymptomatic (without symptoms), but individuals with this disease are at increased risk of developing gastric carcinoma (stomach cancer), which may decrease following *H pylori* eradication. Patients with chronic atrophic gastritis develop low gastric acid output and hypergastrinaemia, which may lead to enterochromaffin-like (ECL) cell hyperplasia and carcinoid tumours.

Autoimmune atrophic gastritis is a chronic inflammatory disease in which the immune system mistakenly destroys a special type of cell (parietal cells) in the stomach. Parietal cells make stomach acid (gastric acid) and a substance one's body needs to help absorb Vitamin B_{12} (called intrinsic factor). The progressive loss of parietal cells may lead to iron deficiency and finally Vitamin B_{12} deficiency. The clinical signs and symptoms of iron deficiency anaemia include tiredness, pale complexion, and heart problems such as exercise intolerance and palpitations. Vitamin B_{12} deficiency may lead to pernicious anaemia as well as gastrointestinal and neurological problems. Autoimmune atrophic gastritis may also be associated with an increased risk of stomach cancer.
(Medscape; Genetic and Rare Diseases Information Center).

Incidence of Atrophic Gastritis (AG) in South Africa
Because Atrophic Gastritis is not a cancerous condition, but rather a possible precursor to stomach cancer, the National Cancer Registry (2013) does not provide any information regarding the incidence of this condition.

According to the National Cancer Registry (2013) the following number of stomach cancer cases were histologically diagnosed in South Africa during 2013:

Group - Males 2013	No of Cases	Lifetime Risk	Percentage of All Cancers
All males	743	1:194	2,07%
Asian males	44	1:140	5,33%
Black males	226	1:402	2,10%
Coloured males	141	1:111	3,38%
White males	332	1:93	1,64%

Group - Females 2013	No of Cases	Lifetime Risk	Percentage of All Cancers
All females	407	1:561	1,11%
Asian females	25	1:280	2,42%
Black females	168	1:979	1,07%
Coloured females	90	1:212	2,21%
White females	124	1:321	0,78%

The frequency of histologically diagnosed cases of stomach cancer in South Africa for 2013 were as follows (National Cancer Registry, 2013):

Group - Males 2013	0 – 19 Years	20 – 29 Years	30 – 39 Years	40 – 49 Years	50 – 59 Years	60 – 69 Years	70 – 79 Years	80+ Years
All males	1	4	28	96	179	211	144	68
Asian males	1	0	1	5	7	15	6	5
Black males	0	2	8	38	59	64	32	9
Coloured males	0	0	6	19	39	38	23	12
White males	0	0	5	16	61	87	81	54

Group - Females 2013	0 – 19 Years	20 – 29 Years	30 – 39 Years	40 – 49 Years	50 – 59 Years	60 – 69 Years	70 – 79 Years	80+ Years
All females	2	8	16	53	96	97	86	38
Asian females	0	0	1	3	5	8	6	1
Black females	1	6	7	31	41	30	25	11
Coloured females	0	1	4	6	23	22	20	10
White females	1	1	2	11	24	34	31	15

N.B. In the event that the totals in any of the above tables do not tally, this may be the result of uncertainties as to the age, race or sex of the individual. The totals for 'all males' and 'all females', however, always reflect the correct totals.

Causes of Atrophic Gastritis (AG)
The main causes of Atrophic Gastritis are:

Helicobacter pylori usually infects the stomach in childhood and the infection progresses if not treated. This type of bacteria can be passed from person to person through direct contact with faeces, vomit, or saliva, and can also be spread through contact with contaminated food or water.

Autoimmune AG occurs when the body produces antibodies that attack the stomach cells responsible for acid production. Antibodies also attack a substance released by these cells known as intrinsic factor. Intrinsic factor helps one to absorb vitamin B_{12}. Its destruction can cause an illness known as pernicious anaemia, in which a lack of vitamin B_{12} leaves one unable to make enough red blood cells.

For both causes, the condition is usually found later in life. Most of those diagnosed with AG are 50 years of age or older.
(Healthline).

Signs and Symptoms of Atrophic Gastritis (AG)
Often there are no symptoms, and as a result, many cases of AG go unrecognised.

An *H. pylori* infection may cause:
- stomach pain
- nausea and vomiting
- loss of appetite
- weight loss
- stomach ulcers
- stomach cancer
- iron deficiency anaemia that does not respond to treatment

Autoimmune AG can lead to vitamin B_{12} deficiency, with symptoms of anaemia, including:

- feeling weak
- lightheadedness
- dizziness
- chest pain
- palpitations
- tinnitus (ringing in the ears)

Vitamin B_{12} deficiency can also cause nerve damage, leading to:

- limb numbness and tingling
- unsteadiness when walking
- mental changes

(Healthline).

Diagnosis of Atrophic Gastritis (AG)

The diagnosis of atrophic gastritis can only be ascertained histologically.

- The endoscopic findings are not helpful for diagnosis, but endoscopy is essential to perform multiple gastric biopsy sampling. At least 2 biopsy samples from the gastric antrum, 2 from the corpus and 1 from the incisure should be obtained and submitted to the pathology laboratory in separate vials.
- Decreased serum pepsinogen I levels and the ratio of pepsinogen I to pepsinogen II in the serum can be used to assess gastric atrophy. The finding of low pepsinogen I levels (< 20 ng/mL) has a sensitivity of approximately 96.2% and a specificity of 97% for detection of fundus atrophy.
- Identifying the underlying cause of atrophic gastritis and assessing specific complications can require several laboratory tests.

Diagnosis of *H pylori*-associated atrophic gastritis is as follows:

- Histologic examination of gastric biopsy with *H pylori* special stains: Histologic identification of *H pylori* is the standard method to assess if the organism is the underlying cause of atrophic gastritis. Histologic examination also helps evaluate the degree and distribution of atrophy, which helps identify the type of atrophic gastritis. Although histologic identification of *H pylori* is the standard approach to identify the infection, at late stages of extensive atrophic gastritis, the number of *H pylori* organisms is decreased markedly because intestinal metaplasia creates an unfavourable environment for *H pylori*. In these cases, other tests, such as the urea breath test (i.e., with nonradioactive isotope 13C or with radioactive isotope 14C), and serologic evidence of infection may provide evidence for *H pylori* infection.
- Rapid urease test from gastric biopsy tissue
- Bacterial culture of gastric biopsy specimens: This usually is performed in the research setting or to assess antibiotic susceptibility in patients in whom first-line eradication therapy fails.
- Serologic detection of anti-*H pylori* antibodies

Diagnosis of autoimmune gastritis is as follows:

- Antiparietal achlorhydria (the absence or lowered production of gastric acid in the stomach) and anti-IF (anti-instrinsic factor) antibodies in the serum
- Achlorhydria, both basal and stimulated, and hypergastrinemia
- Low serum cobalamin (B-12) levels (< 100 pg/mL)
- Shilling test: Results may be abnormal and can be corrected by IF.

(Medscape).

Treatment of Atrophic Gastritis (AG)
Once atrophic gastritis is diagnosed, treatment can be directed:

(1) to eliminate the causal agent, which is a possibility in cases of *H pylori*–associated atrophic gastritis
(2) to correct complications of the disease, especially in patients with autoimmune atrophic gastritis who develop pernicious anaemia (in whom vitamin B_{12} replacement therapy is indicated)
(3) to attempt to revert the atrophic process.

No consensus from different studies exists regarding the reversibility of atrophic gastritis; however, removal of *H pylori* from the already atrophic stomach may block further progression of the disease. Until recently, specific recommendations for *H pylori* eradication were limited to peptic ulcer disease.

If *H pylori* is identified as the underlying cause of gastritis, subsequent eradication now is almost generally accepted practice. Protocols for *H pylori* eradication require a combination of antimicrobial agents and antisecretory agents, such as a proton pump inhibitors (PPIs), ranitidine bismuth citrate (RBC), or bismuth subsalicylate. Despite the combinatorial effect of drugs in regimens used to treat *H pylori* infection, cure rates remain, at best, 80-95%.

Lack of patient compliance and antimicrobial resistance are the most important factors influencing poor outcome. Currently, the most widely used and efficient therapies to eradicate *H pylori* are triple therapies (recommend as first-line treatments) and quadruple therapies (recommended as second-line treatment when triple therapies fail to eradicate *H pylori).* In both cases, best results are achieved by administering therapy for 10-14 days, although some studies have limited the duration of treatment to 7 days. The accepted definition of cure is no evidence of *H pylori* four or more weeks after ending the antimicrobial therapy.

- Triple therapy, with indicated adult dose
    - Twice-a-day (bid) PPI or RBC triple therapies include lansoprazole (Prevacid), 30 mg PO bid; omeprazole (Prilosec), 20 mg PO bid; or RBC (Tritec), 400 mg bid. Antibiotic therapy includes clarithromycin (Biaxin), 500 mg PO bid; amoxicillin, 1000 mg PO bid; or metronidazole, 500 mg PO bid.
    - Pack kits containing combination triple therapies are available as combinations of lansoprazole, amoxicillin, and clarithromycin (PrevPac) and bismuth subsalicylate, tetracycline, and metronidazole (Helidac). PrevPac contains drug combinations in the dosage recommended as first-line treatment by the Maastricht 2-2000 Consensus report from Europe.

- PrevPac components include lansoprazole (Prevacid), 30 mg PO bid; clarithromycin (Biaxin), 500 mg PO bid; and amoxicillin, 1000 mg PO bid.
- Helidac triple-therapy components include bismuth subsalicylate, 525 mg (two 262.4-mg chewable tabs) 4 times per day (qid); metronidazole, 250 mg qid; and tetracycline HCL, 500 mg qid.

- Quadruple therapy, with indicated adult dose is a PPI bid, including lansoprazole (Prevacid), 30mg per mouth twice a day or omeprazole (Prilosec), 20mg per mouth twice a day, and antibiotics, including tetracycline HCl, 500mg per mouth four times per day; bismuth subsalicylate, 120mg per mouth four times a day; and metronidazole, 500mg per mouth 3 times per day).

- Handle subsequent *H pylori* eradication failures on a case-by-case basis.

(eMedicine).

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