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GASTRO ESOPHAGEAL REFLUX DISEASE (GERD) INDUCED ASTHMA: A CASE REPORT

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ABSTRACT GERD induced asthma referred as the inhalation of a small quantity of gastro duodenal contents back into the oesophagus and lungs causes delayed alterations in the immune system, which can lead to asthma. Symptoms of GERD triggered asthma include heartburn, reflux, cough, hoarseness and shortness of breath. Diagnosis similar to that of asthma alone but some specific tests are used to rule out asthma caused by GERD include PH monitoring and PPI therapy. In this case patient was presented with shortness of breath, burning chest, reflux and cough with expectoration and evaluated as GERD induced asthma. Patient was managed with bronchodilators, proton pump inhibitors, antacids, antiallergics, and other supportive therapy and was discharged in stable condition.

KEYWORDS : GERD, Reflux, Asthma, Expectoration, Shortness of breath.

INTRODUCTION:

GERD is a chronic condition that develops when there is a retrograde flow of gastroduodenal contents into the esophagus [1]. GERD may present typically, with heartburn and reflux. According to the Montreal definition and classification of GERD, an atypical presentation of GERD is referredas an extraesophageal syndrome. Common extraesophageal manifestations are dental erosion, laryngitis, laryngeal cancer, otitis media, postnasal drip syndrome, sinusitis, cough, hoarseness, chronic obstructive pulmonary disease, recurrent pneumonia, and asthma. Asthma ischronic inflammatory condition of the airways associated with airway hyperresponsivenessresults in development of wheezing, chest tightness, shortness of breath, and cough[2]. The inhalation of a small quantity of gastroduodenal contents back into the oesophagus and lungs, which is a characteristic of GERD, causes delayed alterations in the immune system, which can lead to asthma (i.e GERD induced asthma) [3].

In general factors that contribute to asthma include: [4]
Genetic factor, Environmental allergens, pollutants and irritants, viral respiratory tract infections, Obesity, GERD, Emotional factors, stress and exercise, Drugs (NSAID's, sulfites and Beta blockers. Perinatal factors (prematurity, increased maternal age, maternal smoking, prenatal exposure to tobacco smoke and breast feeding has not been definitely shown to be protective). Asthma and gastroesophageal reflux disease (GERD) frequently coexist, resulting in complicated interactions in which GERD may exacerbate asthmatic symptoms or asthma may cause or worsen GERD.The prevalence of GERD symptoms is often greater in patients with asthma than in the general population. According to some research, approximately 80% of asthma patients have GERD symptoms as heartburn and regurgitation. Patients with GERD were 1.15 times more likely than those without GERD to develop asthma, as shown in a study of over 100,000 veterans. According to some research using pH monitoring, people with asthma had a 30 percent to 65 percent prevalence of GERD [2].

Asthma and GERD can interact through a variety of mechanisms. Reflux can cause asthma either directly by causing micro aspiration of gastroduodenal contents into the airways or indirectly by causing bronchoconstriction mediated by the vagus nerve [2].

The results of laboratory tests in GERD-triggered asthma are comparable to those in asthma without GERD. A few particular tests, in addition to other routine examinations, are necessary to rule out GERD-induced asthma. In asthmatics, esophageal pH testing using a pH probe placed 5 cm above the lower esophageal sphincter and at the level of the upper esophageal sphincter has a sensitivity and specificity of about 90%. An empiric GERD therapy trial with a proton pump inhibitor is another good test for examining GERD-related asthma (PPI). This straightforward method is effective in both detecting and evaluating GERD as a possible asthma cause. To evaluate asthma symptom improvement, a minimum 3-month empiric trial should be employed [5].

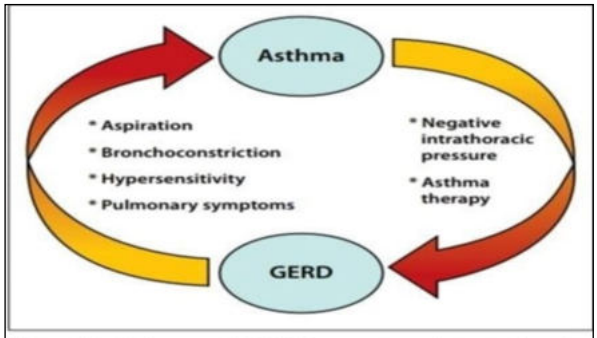

Figure 1 , Asthma and GERD may exacerbate each other GERD may induce bronchospasm, and asthma may induce GERD. Breaking the cycle by aggressively treating both conditions is the key to mitigating patients' symptoms.
GERD, gastroesophageal reflux disease.

Treatment of GERD induced asthma is Lifestyle modifications and medication therapy. Lifestyle modifications include weight loss, sleeping in an inclined position, avoid food triggers and avoiding eating meals at least 3 hours before going to bed. Medication therapy include Bronchodilators, Proton Pump Inhibitors (PPIs), H2 blockers, antacids and prokinetics.

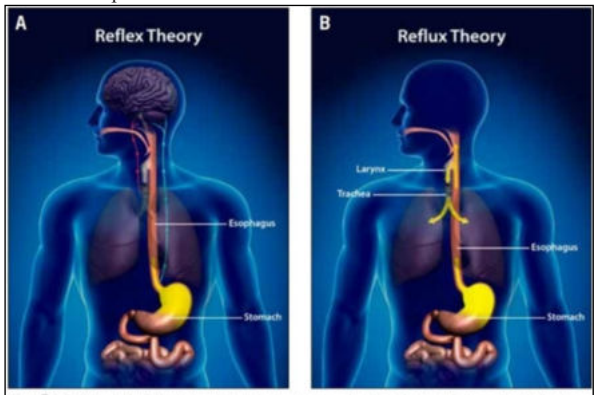

Figure 2 Reflex (A) and reflux (B) pathophysiologic mechanisms in extraesophageal manifestations of gastroesophageal reflux disease.

Case Study:

A 48 years old obese (37kg/m^2) female came to a tertiary care hospital presented with complaints of cough with expectoration, exertional shortness of breath at rest, fever, giddiness, burning chest and reflux symptoms from past 5 days. Last SOB attack was on the day of hospital visit 1 AM associated with nausea. Patient had a long-term history of

GERD since 4 years, non-alcoholic and non-smoker with allergic to chlorpheniramine maleate and penicillin antibiotics was admitted in hospital for further management. Patient was conscious and coherent on examination and vitals of patient were Temperature 98˚F, BP: 110/80 mmHg, RR: 21 breaths/min, PR: 81 beats/min, SpO2: 95% on RA, CVS: S1S2+, RS: Bilateral equal air entry with mild end expiratory wheezing's. **Complete blood picture**: Haemoglobin: 12.5 g/dl, RBC: 4.2×10^{12}/L, WBC: 9400×10^{9}/L, Haematocrit: 40%, MCV: 95fl, MCH: 32.4pg, MCHC: 34.3g/dl, platelets: 270×10^{9}/L, neutrophils: 45%, lymphocytes: 38%, monocytes: 5%, eosinophils: 11%, basophils: 0%, ESR: 38mm/1st hour. **Upper gastrointestinal Scopy:** Mild antralgastritis, **Rapid urease test: positive**, **Spirometry:** FEV_1 66% (moderate), **Chest X-Ray**: pulmonary hyperinflation, bronchial wall thickening noted, **Serum IgE:** 290 UI/L (normal to upper limit), **Apnoea Hypopnea Index (AHI):** 6 (mild sleep apnoea)

DISCUSSION:

Patient was came to hospital with the complaints of cough with expectoration, exertional shortness of breath at rest, fever, giddiness, burning chest and reflux symptoms. She was having a long-term history of GERD since 4 years, non-alcoholic and non-smoker with allergic history to chlorpheniramine maleate and penicillin antibiotics. She was admitted in hospital for further management. On first day physician was advised investigations of complete blood picture, Rapid urease test, spirometry, chest X-ray, serum IgE and sleep apnoea test (AHI). Patient was underwent above investigations and diagnosed as GERD induced Asthma, Helicobacter Pylori gastritis and obstructive sleep apnoea (OSA). On first day patient was treated with PAN (pantoprazole) 40mg IV stat, ZOFER (ondansetron) 8mg IV sos, VERTIN-16 (betahistine) 16mg PO BD, NEKSIUM (esomeprazole) 40mg IV BD, syrup DIGERAFT (sodium alginate, sodium bicarbonate and calcium carbonate) 10ml PO TID,MDI. MAXIFLOW (fluticasone propionate and formoterol fumarate) with spacer 250mcg 2puffs PO BD, MONTEK-LC (montelukast and levocetirizine) 10/5mg PO HS and IVF Normal saline 0.9% 50ml/hr IV infusion. On the second day patient was stable, same treatment was continued and Auto CPAP from 10PM to 6AM added for Obstructive Sleep Apnoea. On day three she was discharged with SOMPRAZ HP kit (clarithromycin, esomeprazole and amoxicillin) 1 kit/day PO for 14 days, SOMPRAZ-D (Esomeprazole) 40mg PO OD for 4 weeks, syrup GAVISCON (sodium alginate, sodium bicarbonate and calcium carbonate) 15ml PO TID after food for 1 week, MDI. MAXIFLOW (fluticasone propionate and formoterol fumarate) with spacer 250mcg 2puffs PO BD till further instructions, Auto CPAP from 10PM to 6AM. The patient and her attenders were given advice on how to proceed with their treatment, and the patient was counselled about drug adherence.

CONCLUSION:

The patient was admitted to the hospital with exertional SOB, burning chest, reflux, and cough with expectoration and was diagnosed with GERD-induced asthma. She had GERD for four years and was not taking any medications to treat it. Uncontrolled GERD is one of the main reason of asthma in this patient, which results in a burning chest, cough and SOB. However, relevant investigations such as upper GI endoscopy and spirometry were performed, which indicated that GERD was causing asthma.Patient was further managed with bronchodilators, proton pump inhibitors, antacids, antiallergicsand other supportive therapy.

Conflicts Of Interest: NO

REFERENCES:

1. Antunes C, Aleem A, Curtis SA. Gastroesophageal Reflux Disease. [Updated 2021 Jul 18]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan.
2. FehmiAtes, MD, and Michael F. Vaezi, MD, PhD, MSc (Epi). Insight Into the Relationship Between Gastroesophageal Reflux Disease and Asthma .2014. Gastroenterology & Hepatology. Volume 10, Issue 11 November 2014.
3. Jennifer Warner. WebMD. [Updated 2008 jul 25]. Viewd 2022 Feb 27. https://www.webmd.com/asthma/news/20080725/link-found-between-asthma-and-gerd
4. **Michael J Morris, Daniel J Pearson, ZabMosenifar. Medscape. [updated 2020 Nov 20]. Viewed 2022 Feb 27.**
5. https://emedicine.medscape.com/article/296301-overview#a4.Stephen J. Sontag and Susan M. Harding. Gastroesophageal reflux and asthma. GI Motility online (2006). Published 16 May 2006. doi:10.1038/gimo47.