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VOLUME 2, ISSUE 3/1

2025

2025

<https://tadqiqot.uz/index.php/spjacd>

ACD  
2027

ISSN 3030-3877

DOI Journal 10.26739/3030-3877

# ANNALS OF CLINICAL DISCIPLINE

2 ЖИЛД, 3/1 СОН

**АННАЛЫ КЛИНИЧЕСКИХ ДИСЦИПЛИН**

ТОМ 2, НОМЕР 3/1

**КЛИНИК ФАНЛАР ЙИЛНОМАСИ**

VOLUME 2, ISSUE 3/1



ТОШКЕНТ-2025

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АННАЛЫ КЛИНИЧЕСКИХ ДИСЦИПЛИН | КЛИНИК ФАНЛАР ЙИЛНОМАСИ

№3/1 (2025) DOI <http://dx.doi.org/10.26739/0000-0000-2025-3/1>

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Журнал включен в перечень ВАК национальных научных изданий, рекомендуемых для публикации основных научных результатов диссертаций по медицинским наукам постановлением № 369/6 от 5 апреля 2025 г.

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### О журнале

Журнал зарегистрирован в Агентство информации и массовых коммуникаций при Администрации Президента Республики Узбекистан  
№ С-239963 от 14 марта 2024 года

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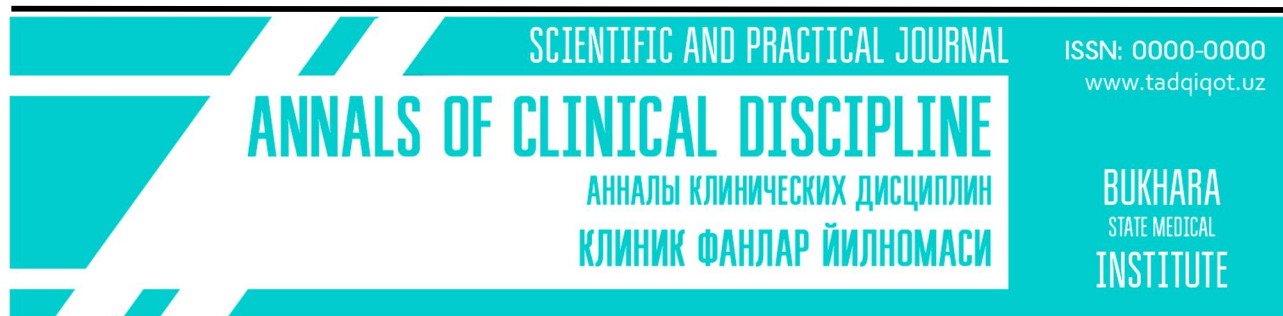
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UDK: 616.329 - 002 : 616.98 : 578.831.31 - 092 - 07

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## INTERRELATIONSHIP BETWEEN GASTROESOPHAGEAL REFLUX DISEASE AND RESPIRATORY DISEASES: GENERAL PATHOGENETIC MECHANISMS AND MODERN RESEARCH FINDINGS

 <http://dx.doi.org/10.5281/zenodo.17352519>

### SUMMARY

The article explores the relationship between gastroesophageal reflux disease (GERD) and respiratory conditions such as chronic obstructive pulmonary disease (COPD), bronchial asthma, and idiopathic pulmonary fibrosis (IPF). It examines shared pathogenic mechanisms, including microaspiration of gastric contents, vagus nerve stimulation, and systemic inflammation. The study highlights the impact of GERD on the exacerbation of respiratory symptoms, increased hospitalization rates, and worsening of overall prognosis.

**Key words:** Gastroesophageal reflux disease (GERD), Chronic obstructive pulmonary disease (COPD), Bronchial asthma, Comorbidity, Pathogenesis, Microaspiration, Systemic inflammation, Proton-pump inhibitors (PPIs)

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## ВЗАИМОСВЯЗЬ ГАСТРОЭЗОФАГЕАЛЬНОЙ РЕФЛЮКСНОЙ БОЛЕЗНИ И РЕСПИРАТОРНЫХ ЗАБОЛЕВАНИЙ: ОБЩИЕ ПАТОГЕНЕТИЧЕСКИЕ МЕХАНИЗМЫ И СОВРЕМЕННЫЕ ИССЛЕДОВАНИЯ

### РЕЗЮМЕ

В статье исследуется взаимосвязь между гастроэзофагеальной рефлюксной болезнью (ГЭРБ) и респираторными заболеваниями, такими как хроническая обструктивная болезнь легких (ХОБЛ), бронхиальная астма и идиопатический легочный фиброз (ИЛФ). Рассматриваются общие патогенетические механизмы, включая микроаспирацию желудочного содержимого, стимуляцию блуждающего нерва и системное воспаление. Данное исследование подчеркивает влияние ГЭРБ на обострение респираторных симптомов, увеличение частоты госпитализаций и ухудшение общего прогноза.

**Ключевые слова:** гастроэзофагеальная рефлюксная болезнь, хроническая обструктивная болезнь лёгких, бронхиальная астма, коморбидность, микроаспирация, системное воспаление, ингибиторы протонной помпы.

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## GASTROEZOFAGEAL REFLYUKS KASALLIGI VA NAFAS YO'LLARI KASALLIKLARI O'RTASIDAGI O'ZARO BOG'LIQLIK: UMUMIY PATOGENEZ MEKANIZMLARI VA ZAMONAVIY TADQIQOTLAR

ХУЛОСА

Maqolada gastroezofageal reflyuks kasalligi (GERK) bilan surunkali obstruktiv o'pka kasalligi (SO'OK), bronxial astma va idiopatik o'pka fibrozisi (IO'F) kabi nafas olish tizimi kasalliklari o'rtasidagi o'zaro bog'liqlik o'rganilgan. Umumiy patogenetik mexanizmlar - oshqozon tarkibining mikroaspiratsiyasi, adashgan nerv (nervus vagus)ning rag'batlantirilishi va tizimli yallig'lanish — ko'rib chiqilgan. Tadqiqot natijalari GERKning nafas olish simptomlarini kuchaytirishi, kasalxonaga yotqizilishlar sonining ortishi va umumiy prognozning yomonlashuviga olib kelishini ta'kidlaydi.

**Kalit so'zlar:** Gastroezofageal reflyuks kasalligi, Surunkali obstruktiv o'pka kasalligi, Bronxial astma, Komorbidlik, Patogenez, Mikroaspiratsiya, Tizimli yallig'lanish, Proton nasos ingibitorlari

Gastroesophageal Reflux Disease (GERD) - is one of the most common gastrointestinal disorders and often has a significant impact on the respiratory system. The association between GERD and respiratory diseases—particularly chronic obstructive pulmonary disease (COPD), bronchial asthma, and idiopathic pulmonary fibrosis (IPF)—is currently a subject of active investigation.

This article aims to explore the pathogenic mechanisms linking GERD with respiratory disorders, summarize recent key research findings, and highlight unresolved clinical issues.

The main proposed pathogenic mechanisms underlying the GERD–respiratory disease connection include:

1. Microaspiration of gastric contents: This phenomenon is especially pronounced during nocturnal GERD episodes, where acidic gastric fluid can enter the airways, triggering inflammation and exacerbating respiratory conditions [1-5].
2. Activation of vagal reflexes: Stimulation of vagal receptors by gastric acid may lead to bronchospasm, thereby worsening symptoms in asthmatic patients [2- 11 ].
3. Systemic inflammation: Studies have shown that GERD may increase levels of inflammatory markers such as interleukin-6 and C-reactive protein, which can contribute to the exacerbation of chronic respiratory diseases like COPD and IPF [ 6- 10].

Liang and colleagues [6-8] demonstrated that patients with both GERD and COPD experienced 30% more frequent exacerbations compared to those without GERD, likely due to persistent microaspiration and airway inflammation. Similarly, Lee et al. [1-6] reported that asthma patients with GERD have more difficulty controlling nocturnal symptoms, often necessitating the use of proton pump inhibitors (PPIs). O'Reilly et al. [4] identified a significant association between GERD and IPF, suggesting a possible role of GERD in the pathogenesis or progression of pulmonary fibrosis.

Despite growing evidence, several unresolved challenges remain:

1. Long-term PPI therapy: The safety and efficacy of prolonged use of proton pump inhibitors in patients with GERD and respiratory comorbidities still require further investigation [23- 29].
2. Personalized treatment approaches: Given the variability in patient response, the development of individualized therapeutic strategies for those with both GERD and respiratory conditions is essential [12 -14].
3. Identification of predictive biomarkers: To date, reliable biomarkers capable of predicting respiratory exacerbations in patients with GERD have not been established [21 -26].

**Conclusion.** The interplay between GERD and respiratory diseases such as COPD, asthma, and IPF warrants further in-depth research. While recent studies underscore the potential role of GERD in the pathophysiology of these diseases, improving patient outcomes will depend on personalized treatment strategies and a better understanding of long-term therapeutic impacts.

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Научно-практический журнал по всем  
направлениям медицины  
основан в 2024 году

Бухарским государственным  
медицинским институтом

Выходит один раз в 3 месяца

Учредитель Бухарский государственный  
медицинский институт