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Research Article

Gastrointestinal Diseases in Pregnant Women: A Retrospective Analysis

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Abstract

This study presents the findings from a study investigating the prevalence of specific gastrointestinal (GI) tract pathologies in pregnant women and their association with neonatal outcomes during the early neonatal period. The investigation is motivated by the high frequency of GI comorbidity during gestation and its potential to adversely affect neonatal status. The pathophysiological mechanisms underlying these conditions, occurring within the context of physiological adaptations to pregnancy, are delineated.

Analysis of the clinical data identified chronic gastritis (36.3%), chronic cholecystitis (23.3%), and hepatobiliary diseases (24.2%) as the most prevalent diagnoses among the studied cohort of pregnant women. Neonatal assessment via the APGAR score revealed that infants born to mothers with hepatobiliary diseases had the lowest mean score at one minute (7.2 ± 0.7), compared to 7.8 ± 0.4 for those born to mothers with chronic gastritis. By the fifth minute of life, APGAR scores improved across all groups, ranging from 8.2 ± 0.6 to 8.7 ± 0.3 points.

The findings indicate that maternal somatic pathology, particularly chronic GI disease, constitutes a significant risk factor for compromised early postnatal adaptation. Consequently, the timely diagnosis of these conditions in pregnancy and the active correction of associated metabolic disturbances are imperative clinical objectives for improving perinatal outcomes.

Keywords: pregnancy, gastrointestinal tract, chronic cholecystitis, gastritis, pancreatitis, gestation

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1. Introduction

Pregnancy induces significant alterations in hormonal balance, metabolic processes, and the functional state of internal organs. Changes within the gastrointestinal (GI) system, driven by both hormonal fluctuations and the mechanical pressure from the expanding uterus, are particularly consequential [1, 2]. Elevated progesterone levels promote cholestasis and gastroesophageal reflux by reducing the tone of the GI tract's smooth muscle, thereby slowing esophageal, gastric, and intestinal motility [3, 4]. Furthermore, the intestinal microbiota composition and acid-base balance are disrupted, which also impacts normal physiological function [5].

Uterine growth increases intra-abdominal pressure, further contributing to reflux and biliary stasis. Concurrent immunological restructuring lowers the body's resistance to chronic infection, creating conditions for the exacerbation of pre-existing GI diseases. The pathogenesis of GI pathology in pregnant women is therefore associated with the complex interplay of hormonal, mechanical, and metabolic factors [6]. Specifically, high progesterone levels reduce the tone of the pylorus and the sphincter of Oddi, leading to the stagnation of gastric contents and bile. Pressure from the enlarged uterus on abdominal organs impedes normal intestinal motility, increasing the likelihood of constipation and dyspeptic symptoms. These issues are compounded by metabolic alterations and changes in hepatic and pancreatic enzyme activity [7].

Although often dismissed as "physiological" in pregnancy, dyspeptic symptoms stemming from exacerbated chronic GI disorders can lead to severe clinical manifestations, a reduced quality of life, and adverse effects on obstetric outcomes [8]. GI diseases constitute a significant proportion of somatic pathology in pregnant women, influencing both the course of gestation and perinatal results [9, 10]. These changes create conditions that activate chronic processes such as cholecystitis, pancreatitis, and gastritis, as well as potentially initiate new disease. Timely detection and management of this pathology are critical, as its symptoms can mimic common pregnancy complaints, complicating diagnosis and patient management [11].

The aim of this work was to investigate the clinical course of gastrointestinal diseases in pregnant women to better understand their mechanisms and symptomatology across different gestational stages.

2. Materials and methods

2.1. Study Design

A retrospective cohort study was conducted using medical records from the period spanning 2020 to 2024.

2.2. Study Population and Data Collection

A retrospective analysis was performed on a sample of 320 medical records from patients admitted to the maternity ward and pregnancy pathology department of the Aktobe Medical Center (Aktobe, Kazakhstan). These records were managed in accordance with the regulatory guidelines of the Ministry of Health of the Republic of Kazakhstan (Orders No. 096/u dated March 6, 2013, and No. 127).

From this initial cohort, a sub-cohort of 66 patients diagnosed with gastrointestinal tract pathology was selected for detailed analysis, representing 20.5% of the total sample. Diagnoses were established based on a comprehensive review of clinical presentations, laboratory findings, abdominal ultrasound examinations, and gastroscopy where clinically indicated.

2.3. Ethical Considerations

Ethical approval for this study was granted by the Bioethics Committee of West Kazakhstan Marat Ospanov State Medical University (Aktobe, Kazakhstan). The study protocol (No. 22, April 9, 2019) was certified to be in full compliance with the ethical principles of the Declaration of Helsinki.

2.4. Statistical Analysis

Clinical and descriptive data from retrospective medical records were analyzed. Continuous variables are presented as mean ± standard deviation (SD). A p-value of less than 0.05 was considered statistically significant.

3. Results

The study of the gastrointestinal tract in pregnant women showed that the most common pathologies were chronic gastritis (36.3%), chronic cholecystitis (23.3%), and liver diseases (24.2%) (Table **1**).

Table 1: Diseases of the gastrointestinal tract in pregnant women.

Disease	Frequency (%)	Number (n)
Chronic cholecystitis	23.3	15
Chronic pancreatitis	16.6	11
Chronic gastritis	36.3	24
Liver diseases	24.2	16
Total	20.5	66

The Apgar score values in newborns at the 1st minute of life ranged from 7.2 ±0.7 points in liver diseases to 7.8 ± 0.4 points in chronic gastritis. At the 5th minute of life, the indicators increased to

8.2±0.6 - 8.7±0.3 points, which indicates a satisfactory condition of the newborns and activation of compensatory mechanisms (Table **2**).

Table 2: Diseases of the gastrointestinal tract in pregnant women and indicators on the Apgar score (average values ± standard deviation).

No	Disease	Frequency (%)	Number (n)	Apgar at 1 minute, scores (M ± SD)	Apgar score is 5 minutes, points (M ± SD)
1	Chronic cholecystitis	23.3	15	7.6 ± 0.5	8.5 ± 0.4
2	Chronic pancreatitis	16.6	11	7.4 ± 0.6	8.3 ± 0.5
3	Chronic gastritis	36.3	24	7.8 ± 0.4	8.7 ± 0.3
4	Liver diseases	24.2	16	7.2 ± 0.7	8.2 ± 0.6
Total		20.5	66	7.5 ± 0.6	8.4 ± 0.4

The collected data indicate that maternal chronic gastrointestinal tract diseases exert a moderate influence on infant health during the early neonatal period. Although Apgar scores remained within the normal physiological range (7-9 points), the values observed in the first minute of life varied depending on the specific maternal pathology.

The most pronounced reduction in the Apgar score was associated with maternal liver disease. This is likely attributable to an impairment of the liver's metabolic and detoxification functions, which can compromise fetal development and diminish its adaptive capabilities. Newborns of mothers with chronic gastritis and cholecystitis presented with higher Apgar scores, suggesting a less severe impact of these conditions on the fetus. The observed increase in Apgar scores by the fifth minute of life across all study groups indicates a robust compensatory potential in the newborns. This favorable adaptation is probably a consequence of adequate obstetric and neonatal management, coupled with timely medical intervention.

4. Discussion

Analysis of gastrointestinal (GI) disease incidence in pregnant women identified chronic gastritis, alongside biliary tract pathology (e.g., cholecystitis) and hepatobiliary diseases, as the most prevalent conditions. These findings are consistent with epidemiological studies reporting a high prevalence of GI comorbidities during gestation [1, 11, 12].

Assessment of neonatal outcomes using the Apgar scale revealed a mild reduction in adaptive capacity among infants born to mothers with chronic GI diseases. The lowest Apgar scores, recorded at both the 1st and 5th minutes, were observed in neonates of mothers with hepatic pathology. This association is likely mediated by impaired hepatobiliary metabolism, leading to potential hypoxic and toxic effects on the fetus [13]. Contemporary research indicates that maternal somatic pathology can adversely affect placental blood flow, promote the development of chronic intrauterine hypoxia, and elevate the risk of intrauterine growth restriction [14, 15].

Notwithstanding these observations, all Apgar scores remained within the normal range (7-9 points). This suggests that the effects of maternal GI pathology were effectively mitigated by comprehensive perinatal monitoring and the timely management of gestational complications. These results underscore the critical importance of a multidisciplinary approach to patient care, involving collaborative management by gastroenterologists, obstetrician-gynecologists, and neonatologists to optimize maternal and neonatal outcomes [4, 14, 16, 17].

5. Conclusion

Thus, despite the relative physiological compensation observed in newborns, the presence of maternal somatic pathology constitutes a risk factor for a less favorable course of early postnatal adaptation. The obtained data indicate that chronic gastrointestinal tract diseases in pregnant women necessitate heightened clinical vigilance from obstetrician-gynecologists and internists to ensure timely diagnosis and the correction of associated metabolic disturbances, thereby improving perinatal outcomes.

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Conflict of Interest

Each author has no conflict of interest related to the presented article. Artificial intelligence (AI) has not been used, and data from our research is provided.

Ethical Statement

Ethical approval for this study was granted by the Ethics Committee of the West Kazakhstan Marat Ospanov Medical University (Protocol No. 22, April 9, 2019). The study was conducted under the ethical principles outlined in the Declaration of Helsinki.

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References

[1] Longo SA, Moore RC, Canzoneri BJ. Gastrointestinal conditions during pregnancy. Clin Colon Rectal Surg. 2010;23(2):80–89. doi:10.1055/s-0030-1254294

[2] Sohan BJ, Anupama S. Physiological changes in pregnant women due to hormonal changes. Cureus. 2024;16(3):e55544. doi:10.7759/cureus.55544

[3] Abo S, Smith D, Stadt M, Layton A. Modelling female physiology from head to toe: Impact of sex hormones, menstrual cycle, and pregnancy. J Theor Biol. 2022;540:111074. doi:10.1016/j.jtbi.2022.111074

[4] Ivanov II, Lyashenko EN, Kosolapova NV, Cheripko MV, Prochan EN, Lyashenko AS, et al. Antenatal fetal death: unsolved problems. Tavr Med-Biol Vestn. 2020;23(1):37–41. (In Russ.) doi:10.37279/2070-8092-2020-23-1-37-41

[5] Ali RA, Egan LJ. Gastroesophageal reflux disease in pregnancy. Best Pract Res Clin Gastroenterol. 2007;21(5):793–806. doi:10.1016/j.bpg.2007.05.006

[6] Zakaria ZZ, Al-Rumaihi S, Al-Absi RS, Farah H, Muram Elamin M, Nader R, et al. Physiological changes and interactions between microbiome and the host during pregnancy. Front Cell Infect Microbiol. 2022;12:824925. doi:10.3389/fcimb.2022.824925

[7] Dajti E, Bruni A, Barbara G, Azzaroli F. Diagnostic approach to elevated liver function tests during pregnancy: A pragmatic narrative review. J Pers Med. 2023;13(9):1388. doi:10.3390/jpm13091388

[8] Noyola-Martínez N, Halhali A, Barrera D. Steroid hormones and pregnancy. Gynecol Endocrinol. 2019;35(5):376–384. doi:10.1080/09513590.2018.1564742

[9] Amiraslanova MM, Zemlina NS, Kuznetsova IV. The interplay of hormonal and infectious factors in the pathogenesis of complicated pregnancy. Med Advice. 2022;16(6):122–129. (In Russ.) doi:10.21518/2079-701X-2022-16-6-122-129

[10] Hautamäki H, Gissler M, Heikkinen-Eloranta J, Tiitinen A, Peuranpä P. Pregnancy and perinatal outcomes in women with recurrent pregnancy loss—A case-control study. Acta Obstet Gynecol Scand. 2025;104(2):368–379. doi:10.1111/aogs.15039

[11] Kelly RH, Russo J, Katon W. Somatic complaints among pregnant women cared for in obstetrics: normal pregnancy or depressive and anxiety symptom amplification revisited? Gen Hosp Psychiatry. 2001;23(3):107–113. doi:10.1016/S0163-8343(01)00129-3

[12] Gomes CF, Sousa M, Lourenço I, Martins D, Torres J. Gastrointestinal diseases during pregnancy: what does the gastroenterologist need to know? Ann Gastroenterol. 2018;31(4):385–394. doi:10.20524/aog.2018.0264

[13] Granese R, Calagna G, Alibrandi A, Martinelli C, Romeo P, Filomia R, et al. Maternal and neonatal outcomes in intrahepatic cholestasis of pregnancy. J Clin Med. 2023;12(13):4407. doi:10.3390/jcm12134407

[14] Reed G, Deeb M, Mathew J, Rigby K, Cravens E, Raker C, et al. Pregnancy outcomes from a multidisciplinary obstetric-medicine/rheumatology clinic in the United States: A five-year retrospective analysis. Arthritis Care Res (Hoboken). 2024;76(12):1744–1750. doi:10.1002/acr.25425

[15] Zhang Y, Ding W, Wu T, Wu S, Wang H, Fawad M, et al. Pregnancy with multiple high-risk factors: a systematic review and meta-analysis. J Glob Health. 2025;15:04027. doi:10.7189/jogh.15.04027

[16] Razaz N, Cnattingius S, Joseph KS. Association between Apgar scores of 7 to 9 and neonatal mortality and morbidity: population based cohort study of term infants in Sweden. BMJ. 2019;365: 1656. doi:10.1136/bmj.l1656

[17] Salustiano EMA, Campos JADB, Ibidi SM, Ruano R, Zugaib M. Low Apgar scores at 5 minutes in a low risk population: maternal and obstetrical factors and postnatal outcome. Rev Assoc Med Bras (1992). 2012;58(5):587–593. doi:10.1590/S0104-42302012000500017