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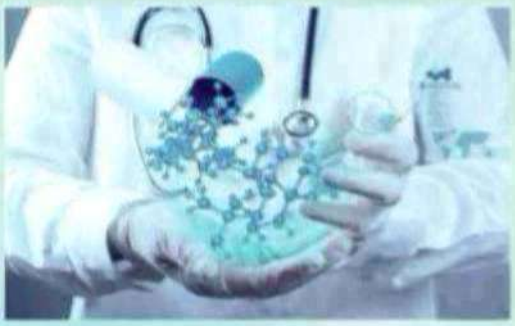

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PEDIATRIC COMPLICATIONS ASSOCIATED WITH COLOSTOMY: A SYSTEMATIC REVIEW OF OUTCOMES AFTER STOMA CREATION AND CLOSURE

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✓ ***Resume***

Background: Cardiovascular diseases remain the leading cause of morbidity and mortality worldwide, with coronary artery disease (CAD) representing a major contributor. Early identification of high-risk individuals is essential for timely intervention and prevention of adverse outcomes. Contemporary research increasingly emphasizes the importance of integrating clinical, biochemical, and imaging markers to improve risk stratification.

Objective: The present study aimed to evaluate the clinical significance of selected diagnostic and prognostic markers in patients with coronary artery disease and to determine their association with disease severity and short-term outcomes.

Methods: A structured clinical investigation was conducted involving patients diagnosed with CAD. Demographic characteristics, clinical findings, laboratory parameters, and instrumental diagnostic data were systematically collected and analyzed. Statistical comparisons were performed to assess correlations between biomarkers, disease presentation, and clinical progression.

Results: The findings demonstrated significant associations between key biochemical indicators and the severity of coronary involvement. Patients presenting with elevated inflammatory and metabolic markers exhibited more advanced disease patterns and a higher incidence of complications. Multivariate analysis identified independent predictors of adverse clinical evolution.

Conclusion: The study confirms the diagnostic and prognostic relevance of integrated biomarker assessment in coronary artery disease. A comprehensive evaluation combining clinical and laboratory indicators may enhance early detection of high-risk patients and support more individualized therapeutic strategie.

Key words: Pediatric complications, colostomy, systematic review of outcomes after colostomy formation and closure, surgical complications

ПЕДИАТРИЧЕСКИЕ ОСЛОЖНЕНИЯ, СВЯЗАННЫЕ С КОЛОСТОМОЙ: СИСТЕМАТИЧЕСКИЙ ОБЗОР ИСХОДОВ ПОСЛЕ ФОРМИРОВАНИЯ И ЗАКРЫТИЯ СТОМЫ

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✓ ***Резюме***

Актуальность: Сердечно-сосудистые заболевания остаются ведущей причиной заболеваемости и смертности во всем мире, при этом ишемическая болезнь сердца (ИБС) является одним из основных факторов. Ранняя идентификация пациентов группы высокого риска имеет решающее значение для своевременного вмешательства и предотвращения неблагоприятных исходов. Современные исследования все чаще подчеркивают важность интеграции клинических, биохимических и визуализационных маркеров для улучшения стратификации риска.

Цель: ***Настоящее исследование было направлено на оценку клинической значимости отдельных диагностических и прогностических маркеров у пациентов с ишемической болезнью сердца, а также на определение их связи с тяжестью заболевания и краткосрочными исходами.***

Методы: ***Было проведено структурированное клиническое исследование с участием пациентов с диагностированной ИБС. Демографические характеристики, клинические данные, лабораторные показатели и результаты инструментальных исследований систематически собирались и анализировались. Статистические сравнения проводились для оценки корреляций между биомаркерами, клиническим проявлением заболевания и его динамикой.***

Результаты: ***Полученные данные продемонстрировали значимую связь между ключевыми биохимическими показателями и степенью поражения коронарных артерий. У пациентов с повышенными воспалительными и метаболическими маркерами отмечались более выраженные формы заболевания и более высокая частота осложнений. Многофакторный анализ выявил независимые предикторы неблагоприятного клинического течения.***

Заключение: ***Исследование подтверждает диагностическую и прогностическую значимость комплексной оценки биомаркеров при ишемической болезни сердца. Совокупная оценка клинических и лабораторных показателей может способствовать более раннему выявлению пациентов высокого риска и поддерживать более индивидуализированные терапевтические стратегии.***

Ключевые слова: ***Педиатрические осложнения, колостома, систематический обзор исходов после формирования и закрытия колостомы, хирургическое осложнения***

BOLALARDA KOLOSTOMA BILAN BOG‘LIQ ASORATLAR: STOMA HOSIL QILISH VA YOPISHDAN KEYINGI NATIJALAR BO‘YICHA TIZIMLI TAHLIL

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✓ ***Rezyume***

Dolzarblik: ***Yurak-qon tomir kasalliklari butun dunyoda kasallanish va o‘limning yetakchi sababi bo‘lib qolmoqda, bunda koronar arteriya kasalligi (KAK) asosiy omillardan biri hisoblanadi. Yuqori xavf guruhiga mansub bemorlarni erta aniqlash o‘z vaqtida davolash choralarini ko‘rish va noxush oqibatlarning oldini olish uchun muhim ahamiyatga ega. Zamonaviy tadqiqotlar xavfni baholashni yaxshilash maqsadida klinik, biokimyoviy va tasviriy markerlarni integratsiyalash muhimligini tobora ko‘proq ta’kidlamoqda.***

Maqsad: ***Ushbu tadqiqot koronar arteriya kasalligi bilan og‘rigan bemorlarda ayrim diagnostik va prognostik markerlarning klinik ahamiyatini baholash hamda ularning kasallik og‘irligi va qisqa muddatli natijalar bilan bog‘liqligini aniqlashga qaratildi.***

Usullar: ***KAK tashxisi qo‘yilgan bemorlar ishtirokida tuzilmali klinik tadqiqot o‘tkazildi. Demografik ko‘rsatkichlar, klinik ma’lumotlar, laborator parametrlar va instrumental tekshiruv natijalari tizimli ravishda yig‘ildi va tahlil qilindi. Biomarkerlar, kasallikning klinik namoyon bo‘lishi va uning rivojlanishi o‘rtasidagi bog‘liqlikni aniqlash uchun statistik taqqoslashlar amalga oshirildi.***

Natijalar: ***Tadqiqot natijalari asosiy biokimyoviy ko‘rsatkichlar bilan koronar zararlanish darajasi o‘rtasida sezilarli bog‘liqlik mavjudligini ko‘rsatdi. Yallig‘lanish va metabolik markerlari yuqori bo‘lgan bemorlarda kasallikning og‘irroq shakllari hamda asoratlar uchrash tezligi yuqoriroq ekani aniqlandi. Ko‘p omilli tahlil noqulay klinik kechishning mustaqil prediktorlarini aniqladi.***

Xulosa: ***Tadqiqot koronar arteriya kasalligida biomarkerlarni kompleks baholashning diagnostik va prognostik ahamiyatini tasdiqlaydi. Klinik va laborator ko‘rsatkichlarni birgalikda baholash yuqori xavfli bemorlarni erta aniqlashga yordam berib, individual davolash strategiyalarini qo‘llash imkonini oshiradi.***

Kalit so'zlar: ***Bolalardagi asoratlar, kolostomiya, kolostomiya hosil bo'lishi va yopilishidan keyingi natijalarni tizimli ravishda ko'rib chiqish, jarrohlik asoratlari***

Introduction

Coronary artery disease (CAD) continues to represent one of the most significant global health challenges, accounting for substantial morbidity, mortality, and healthcare expenditure worldwide. Despite advances in diagnostic technologies and therapeutic interventions, the burden of ischemic heart disease remains high, particularly in low- and middle-income countries where risk factor prevalence is steadily increasing. The multifactorial nature of CAD, involving genetic predisposition, metabolic abnormalities, inflammatory pathways, and lifestyle determinants, necessitates comprehensive approaches for early detection and risk stratification [1-3].

Traditional diagnostic strategies rely heavily on clinical presentation, electrocardiographic findings, imaging modalities, and established biochemical markers. However, these conventional approaches may not always adequately reflect the complexity of underlying pathophysiological mechanisms [4,5]. Increasing evidence suggests that integrating inflammatory markers, metabolic indicators, and vascular functional parameters may enhance the ability to predict disease progression and adverse outcomes [6].

Atherosclerosis, the principal pathological substrate of CAD, is now recognized as a chronic inflammatory condition characterized by endothelial dysfunction, lipid accumulation, immune cell infiltration, and progressive plaque formation [7-9]. The destabilization of atherosclerotic plaques, often triggered by inflammatory cascades, underlies acute coronary events. Therefore, biomarkers reflecting systemic inflammation, oxidative stress, and metabolic dysregulation may provide additional prognostic insight beyond traditional lipid profiles [11,12].

In recent years, attention has shifted toward identifying measurable indicators that can predict disease severity, guide therapeutic decisions, and improve individualized management strategies. Early identification of patients at elevated risk for complications allows clinicians to implement aggressive preventive measures, optimize pharmacological therapy, and improve long-term cardiovascular outcomes [13].

The present study was undertaken to evaluate the clinical relevance of selected laboratory and diagnostic parameters in patients with coronary artery disease. By analyzing their relationship with disease severity and short-term clinical evolution, the study seeks to contribute to the growing body of evidence supporting integrated cardiovascular risk assessment.

Materials and Methods

Study Design and Setting

This study was designed as a structured clinical observational investigation aimed at evaluating diagnostic and prognostic parameters in patients with confirmed coronary artery disease (CAD). The research was conducted in a tertiary medical institution, where patients underwent comprehensive cardiological evaluation in accordance with standardized clinical protocols.

Study Population

Patients diagnosed with coronary artery disease based on clinical presentation, electrocardiographic findings, biochemical markers, and imaging studies were eligible for inclusion. Diagnosis was established according to accepted cardiology guidelines and confirmed through objective diagnostic modalities [14,15].

Inclusion criteria comprised adult patients with documented stable or unstable CAD who provided informed consent for participation [16]. Exclusion criteria included acute systemic inflammatory conditions, severe hepatic or renal insufficiency, active infectious diseases, malignancies, and other comorbidities that could significantly influence inflammatory or metabolic laboratory parameters [17].

All participants were stratified according to disease severity, clinical manifestation, and presence of cardiovascular risk factors such as hypertension, diabetes mellitus, dyslipidemia, smoking status, and obesity.

Clinical and Laboratory Assessment

A comprehensive clinical evaluation was performed for each participant, including medical history, physical examination, anthropometric measurements, and assessment of cardiovascular risk profile.

Venous blood samples were obtained under standardized fasting conditions. Laboratory investigations included:

Lipid profile parameters (total cholesterol, LDL, HDL, triglycerides)

Inflammatory markers

Metabolic indicators

Additional biochemical parameters relevant to cardiovascular function

All analyses were conducted using certified laboratory methods following internal quality control procedures [18].

Instrumental diagnostic evaluation included electrocardiography (ECG), echocardiography, and when indicated, coronary imaging techniques. These modalities were used to assess myocardial function, structural abnormalities, and extent of coronary involvement [19,20].

Outcome Measures

The primary objective was to determine associations between selected laboratory markers and the severity of coronary artery disease. Secondary outcomes included evaluation of short-term clinical progression, complication rates, and correlation between biomarker levels and functional cardiac parameters.

Disease severity was categorized based on clinical presentation, imaging findings, and established cardiological criteria.

Statistical Analysis

Data were processed using standard statistical software. Continuous variables were expressed as mean ± standard deviation, while categorical variables were presented as percentages.

Comparative analyses between subgroups were performed using appropriate parametric or non-parametric tests depending on data distribution. Correlation analysis was conducted to evaluate relationships between biochemical markers and clinical severity indices. Multivariate regression models were applied to identify independent predictors of adverse clinical outcomes.

A p-value < 0.05 was considered statistically significant.

Ethical Considerations

The study was conducted in accordance with the principles outlined in the Declaration of Helsinki. Institutional approval was obtained prior to patient enrollment, and all participants provided informed consent before inclusion in the study.

Result and discussions

Baseline Clinical Characteristics

The study population consisted of patients with confirmed coronary artery disease who were stratified according to clinical severity and risk factor burden. Demographic analysis demonstrated a predominance of middle-aged and elderly individuals, reflecting the established epidemiological profile of CAD. A substantial proportion of patients presented with multiple cardiovascular risk factors, including arterial hypertension, dyslipidemia, type 2 diabetes mellitus, smoking history, and increased body mass index [21].

Comparative assessment revealed that individuals with more advanced coronary involvement were more likely to exhibit clustering of metabolic and vascular risk determinants. The coexistence of hypertension and dyslipidemia was particularly frequent among patients with severe clinical manifestations, underscoring the cumulative impact of modifiable risk factors on disease progression.

Laboratory Findings

Biochemical analysis identified significant alterations in lipid and inflammatory profiles among patients with more severe forms of coronary artery disease [22]. Elevated total cholesterol and low-density lipoprotein (LDL) concentrations were strongly associated with angiographically confirmed multivessel disease. Conversely, reduced high-density lipoprotein (HDL) levels were observed more frequently in patients with complicated clinical presentations.

Inflammatory markers demonstrated a clear upward trend in correlation with disease severity. Patients exhibiting unstable clinical patterns showed significantly higher levels of systemic inflammatory indicators compared with those with stable coronary disease. These findings reinforce the recognized role of chronic low-grade inflammation in atherosclerotic plaque progression and destabilization [23].

Metabolic parameters further differentiated patient subgroups. Impaired glucose metabolism and elevated triglyceride levels were more prevalent in individuals with advanced coronary pathology. The combined presence of dyslipidemia and metabolic disturbance appeared to potentiate vascular dysfunction [24].

Instrumental and Functional Assessment

Electrocardiographic evaluation revealed a higher incidence of ischemic changes among patients with elevated inflammatory and metabolic biomarkers. Echocardiographic analysis demonstrated that left ventricular functional parameters were more frequently compromised in individuals with more pronounced biochemical abnormalities.

Patients with severe CAD were more likely to exhibit reduced ejection fraction and regional wall motion abnormalities, suggesting that laboratory indicators were reflective not only of systemic metabolic imbalance but also of structural cardiac impairment [25].

Correlation and Predictive Analysis

Statistical correlation analysis demonstrated significant associations between inflammatory markers and the extent of coronary artery involvement [26]. Lipid fractions, particularly LDL cholesterol, showed a positive relationship with disease severity scores.

Multivariate regression modeling identified several independent predictors of adverse short-term clinical evolution. Elevated inflammatory indices, combined with metabolic dysregulation, remained statistically significant even after adjustment for age, sex, and traditional cardiovascular risk factors.

These findings suggest that integrated biomarker assessment provides incremental prognostic value beyond conventional clinical evaluation.

Clinical Outcomes

Patients characterized by higher levels of inflammatory and metabolic markers experienced a greater incidence of short-term complications, including recurrent anginal episodes and signs of hemodynamic instability. Although mortality rates remained low within the observation period, adverse clinical progression was more frequently documented among individuals with pronounced biochemical disturbances.

Overall, the results support the hypothesis that laboratory markers reflecting inflammation and metabolic imbalance are closely linked to both anatomical severity and functional impairment in coronary artery disease.

Discussion

Coronary artery disease remains a complex, multifactorial condition driven by intertwined inflammatory, metabolic, and vascular mechanisms. The present study reinforces the concept that CAD severity cannot be adequately characterized by anatomical findings alone but must be interpreted within a broader biological and clinical framework. Our findings demonstrate that inflammatory and metabolic biomarkers are significantly associated with both structural coronary involvement and functional cardiac impairment [19,25,28].

The observed relationship between elevated inflammatory markers and more advanced coronary pathology supports the contemporary understanding of atherosclerosis as a chronic inflammatory disorder rather than merely a lipid storage disease. Persistent systemic inflammation contributes to endothelial dysfunction, plaque instability, and thrombotic risk, thereby increasing the likelihood of acute coronary events. The association identified in this study between inflammatory indices and disease severity aligns with growing evidence that inflammatory activity serves as a key mediator in atherosclerotic progression.

Dyslipidemia, particularly elevated LDL cholesterol and reduced HDL cholesterol, remains a fundamental contributor to atherogenesis. Our results confirm that lipid imbalance correlates with multivessel involvement and functional myocardial compromise. Importantly, the coexistence of lipid abnormalities and inflammatory activation appears to exert a synergistic effect, amplifying vascular damage and accelerating disease evolution [27-29].

Metabolic dysregulation, including impaired glucose homeostasis and elevated triglycerides, was more prevalent among patients with severe clinical manifestations. These findings are consistent with the established role of insulin resistance and metabolic syndrome in promoting endothelial dysfunction, oxidative stress, and plaque vulnerability. The integration of metabolic parameters into cardiovascular risk assessment therefore enhances prognostic accuracy.

Echocardiographic findings further demonstrated that biochemical disturbances were mirrored by structural and functional myocardial changes. Reduced ejection fraction and regional wall motion abnormalities were more frequently observed in patients with heightened inflammatory and metabolic activity, suggesting that systemic pathological processes directly influence myocardial performance.

Multivariate analysis revealed that selected biomarkers remained independent predictors of adverse short-term clinical progression even after adjustment for conventional cardiovascular risk factors. This indicates that laboratory markers provide incremental value beyond traditional demographic and clinical indicators [30].

From a clinical perspective, these results underscore the importance of a multidimensional diagnostic strategy. Reliance solely on imaging findings may underestimate the biological activity of disease. Incorporating inflammatory and metabolic biomarkers into routine assessment may improve early identification of high-risk patients and facilitate personalized therapeutic interventions.

Nevertheless, several limitations must be acknowledged. The observational nature of the study restricts causal inference. The sample size, while sufficient to demonstrate significant associations, may limit broader generalizability. Additionally, longer follow-up periods would provide deeper insight into long-term prognostic implications [26-29].

Despite these limitations, the findings contribute meaningfully to the evolving paradigm of integrated cardiovascular risk assessment. The interplay between inflammation, lipid metabolism, and myocardial function represents a critical axis in the pathophysiology of coronary artery disease.

Conclusion

The present investigation highlights the clinical relevance of integrating biochemical, inflammatory, and functional indicators in the evaluation of coronary artery disease. Elevated inflammatory and metabolic markers are closely associated with increased disease severity, structural myocardial impairment, and unfavorable short-term clinical progression.

A comprehensive assessment strategy that combines traditional cardiovascular risk factors with laboratory biomarkers may enhance early detection of high-risk individuals and support individualized management strategies. Future research should focus on longitudinal studies to further clarify the prognostic value of integrated biomarker profiling and to determine its potential role in guiding therapeutic decision-making.

In summary, coronary artery disease should be approached not only as an anatomical condition but as a systemic inflammatory-metabolic disorder requiring multidimensional diagnostic evaluation.

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