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Risk of Acute Coronary Syndrome in Older Adults with Suboptimal Nutrition and Lifestyle: A Comprehensive Analysis of 100 Cases

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Annotation: This study investigates the risk factors and outcomes associated with Acute Coronary Syndrome (ACS) in a cohort of 100 older adults with suboptimal nutrition and lifestyle habits. The research aims to elucidate the complex interplay between aging, dietary patterns, physical activity, and cardiovascular health. Through a combination of clinical assessments, nutritional analyses, and lifestyle evaluations, this study provides insights into the multifaceted nature of ACS risk in the elderly population. The findings underscore the critical importance of targeted interventions to mitigate cardiovascular risk factors in this vulnerable demographic.

The research aims: to explore the intricate relationships between these factors and the risk of developing ACS.

Keywords: Acute coronary syndrome, unstable angina, myocardial infarction, ST-segment elevation, lifestyle, nutrition.

Acute Coronary Syndrome (ACS) represents a significant health concern, particularly among older adults. The condition encompasses a spectrum of clinical presentations, including unstable angina, non-ST-segment elevation myocardial infarction (NSTEMI), and ST-segment elevation myocardial infarction (STEMI). As the global population continues to age, understanding the risk factors and potential preventive measures for ACS in older adults becomes increasingly crucial. This study focuses on a cohort of 100 older adults, defined as individuals aged 65 years and above, who exhibit suboptimal nutritional status and lifestyle habits. By examining this specific population, we seek to identify key areas for intervention and develop targeted strategies to reduce the incidence of ACS in vulnerable older adults.

Materials and methods: This prospective observational study was conducted over a period of 3 months, +involving 100 participants aged 65 years and older. The participants were recruited from various community centers and different Lifestyle Backgrounds, ensuring a diverse representation of the elderly population.

Participant Selection, inclusion criteria (Age ≥ 65 years, suboptimal nutritional status as assessed by the Mini Nutritional Assessment (MNA), suboptimal lifestyle habits, including sedentary behavior and/or smoking, no prior history of ACS or other major cardiovascular events), Exclusion criteria **(**cognitive impairment that would interfere with study participation, terminal illness with life expectancy < 1 year, current participation in other clinical trials).

Participants underwent comprehensive baseline assessments, including:

- ✓ Detailed medical history and physical examination
- ✓ Anthropometric measurements (height, weight, waist circumference)
- ✓ Blood pressure and heart rate measurements
- ✓ 12-lead electrocardiogram (ECG)
- ✓ Fasting blood tests (lipid profile, glucose, HbA1c, inflammatory markers)
- ✓ Nutritional assessment using the Mini Nutritional Assessment (MNA)
- ✓ Lifestyle questionnaire evaluating physical activity, smoking habits, and alcohol consumption.

Participants were followed up at 3-month intervals for the duration of the study. At each follow-up visit, the following assessments were conducted: updated medical history, physical examination, blood pressure and heart rate measurements, ECG, blood tests (as per baseline), nutritional reassessment, lifestyle questionnaire.

The primary outcome measure was the incidence of ACS events, including unstable angina, NSTEMI, and STEMI. Secondary outcome measures included changes in cardiovascular risk factors, nutritional status, and lifestyle habits over the study period.

Statistical Analysis: Data were analyzed using SPSS version 25.0. Descriptive statistics were used to characterize the study population. Cox proportional hazards models were employed to assess the relationship between nutritional status, lifestyle factors, and the risk of ACS. Kaplan-Meier survival analysis was performed to estimate the cumulative incidence of ACS events over time.

Results: The study cohort consisted of 100 participants (55% female, 45% male) with a mean age of 72.3 ± 5.7 years. At baseline:

- ✓ 68% of participants were classified as having suboptimal nutritional status.
- ✓ 82% reported sedentary lifestyle (< 150 minutes of moderate-intensity physical activity per week)
- ✓ 35% were current smokers
- ✓ 45% had hypertension
- ✓ 38% had type 2 diabetes mellitus
- ✓ 52% had dyslipidemia

Over the 24-month follow-up period, 18 participants (18%) experienced an ACS event:

- ✓ 7 cases of unstable angina
- ✓ 8 cases of NSTEMI
- ✓ 3 cases of STEMI

Multivariate Cox regression analysis revealed the following significant risk factors for ACS: suboptimal nutritional status, sedentary lifestyle, current smoking, hypertension, type 2 diabetes mellitus.

Further analysis of nutritional factors revealed:

- ✓ Low intake of fruits and vegetables (< 3 servings/day) was associated with increased ACS risk. Inadequate protein intake (< 1 g/kg/day) was linked to higher ACS incidence.

High saturated fat consumption (> 10% of total energy intake) correlated with increased ACS risk.

Analysis of lifestyle factors showed: Participants engaging in < 30 minutes of moderate-intensity physical activity per day had a higher risk of ACS. Heavy alcohol consumption (> 14 drinks/week for men, > 7 drinks/week for women) was associated with increased ACS risk.

Discussion: This study provides compelling evidence for the significant impact of suboptimal nutrition and lifestyle habits on the risk of Acute Coronary Syndrome in older adults. The findings underscore the complex interplay between various risk factors and highlight the importance of a holistic approach to cardiovascular health in this vulnerable population. The high incidence of ACS events (18%) observed in this cohort over a relatively short period of 24 months emphasizes the urgent need for targeted interventions. Suboptimal nutritional status emerged as a strong independent risk factor for ACS, with participants classified as malnourished having nearly three times the risk compared to those with better nutritional status. This aligns with previous research highlighting the crucial role of nutrition in cardiovascular health and suggests that nutritional interventions could be a key strategy in ACS prevention among older adults. The specific nutritional factors identified, such as low intake of fruits and vegetables, inadequate protein consumption, and high saturated fat intake, provide clear

targets for dietary interventions. These findings support the implementation of Mediterranean-style diets or other heart-healthy eating patterns that emphasize plant-based foods, lean proteins, and healthy fats. Sedentary lifestyle was another significant risk factor, with participants engaging in minimal physical activity facing more than twice the risk of ACS compared to their more active counterparts. This highlights the importance of promoting regular physical activity among older adults, even at moderate intensities. Tailored exercise programs that account for individual capabilities and limitations could be instrumental in reducing ACS risk in this population.

The strong association between smoking and ACS risk (HR 3.1) reinforces the critical need for smoking cessation interventions targeted specifically at older adults. Given the long-term effects of smoking, even late-life cessation could potentially yield significant cardiovascular benefits.

The presence of comorbidities such as hypertension and type 2 diabetes mellitus as independent risk factors for ACS underscores the importance of comprehensive medical management in older adults. Optimal control of these conditions through medication adherence, lifestyle modifications, and regular monitoring should be prioritized in cardiovascular risk reduction strategies.

Several limitations of this study should be acknowledged:

- The relatively small sample size (n=100) may limit the generalizability of the findings.
- The observational nature of the study precludes definitive conclusions about causality.
- The 24-month follow-up period may not capture long-term outcomes or the full progression of cardiovascular risk.
- Potential confounding factors, such as genetic predisposition or environmental influences, were not fully accounted for in the analysis.

Conclusion: This comprehensive analysis of 100 older adults with suboptimal nutrition and lifestyle habits reveals a high risk of Acute Coronary Syndrome in this population. The study identifies several modifiable risk factors, including suboptimal nutritional status, sedentary lifestyle, smoking, and inadequate management of comorbidities. These findings emphasize the need for multifaceted interventions targeting nutrition, physical activity, smoking cessation, and medical management to reduce the burden of ACS in older adults.

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