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1. **Statins, commonly co-prescribed drugs, and concomitant risk factors: A protective, neutral, or harmful association with common cancer types development: A 10-year multicentric retrospective Lebanese study**
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2. **The association between angiotensin receptor blockers and lung, bladder, and colon cancer development: A 10-year multicentric retrospective Lebanese study.** Yara G. Dagher, Sandra El Helou, Karen G. Haifa, Issam G. Chalhoub, Rita T. Boulos, Bachir Atallah, Fadi Nasr, Issam Kassab, Mirna N. Chahine. *Medicine, September 08, 2023 - Volume 102 - Issue 36* ***Impact factor 1.552***

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Observational Study

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Statins, commonly coprescribed drugs, and concomitant risk factors: A protective, neutral, or harmful association with common cancer types development

A 10-year multicentric retrospective lebanese study

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Abstract

Elevated blood levels of low-density lipoprotein cholesterol are a major cardiovascular risk factor, and cholesterol-lowering drugs are among the most prescribed drugs worldwide. Cancer is the second leading cause of death after cardiovascular diseases. The relationship between cancer development and statins intake is controversial, and there are no clear studies in Lebanon and the Middle East concerning this topic. Hence, our study aimed to search for any possible association of statin intake as well as other medications (proton pump inhibitors [PPI], metformin, Aspirin, Angiotensin-Converting Enzyme inhibitors, and fenofibrate) with lung, colorectal cancer (CRC), and bladder cancer development in the Lebanese population. A retrospective study was performed on 709 subjects divided into 2 main groups: control (no cancer ± statin intake), and cases (either lung, or colorectal, or bladder cancer ± statin intake). Collected data included the age and gender of the patient, socioeconomic status, presence of cardiovascular disease and comorbidities, cancer risk factors, and the intake type, dose, and duration of statins. Bivariate, multivariate, and binary logistic analyses were enrolled. Out of 709 participants, 63.2% were males and 75% were cancer-positive (24.1%: lung cancer, 26.7%: CRC, 24.1%: bladder cancer). The overall intake of statins was not shown to significantly affect cancer development. However, a duration-response relationship was established between Simvastatin and lung cancer (odds ratio [OR]=1.208) as well as bladder cancer (OR=1.189). No significant association was found between each statin and CRC. Although PPIs intake was associated with a possibly harmful effect on lung cancer development (OR=3.42), it revealed a protective association with CRC development (OR=0.38). Other risk factors such as smoking and age were strongly associated (harmful) with lung and bladder cancer development. Physical inactivity and a family history of CRC were each associated with a harmful effect on CRC development. A harmful association with the development of lung and bladder cancer was found with the increasing duration of intake of Simvastatin. Other drugs such as PPIs and specific risk factors were also associated negatively or positively with the development of these 3 cancers. These findings should be validated by further investigations to guide clinicians on optimal treatment options for their patients.

Abbreviations: ACEI = angiotensin-converting enzyme inhibitors, CRC = colorectal cancer, CVD = cardiovascular disease, OR = odds ratio, PPI = proton pump inhibitors.

Keywords: bladder, cancer, cardiovascular diseases, colorectal, Lebanon, lung, statins

1. Introduction

Cardiovascular diseases (CVDs) are the primary cause of death worldwide. According to the World Health Organization, around 17.9 million people died from CVDs in 2019, representing 1 to 3rd of all global deaths.[1] Atherosclerosis is undoubtedly the most frequent underlying cause of most CVDs.

IGC, RTB, YGD, SEH, and KGH contributed equally to this work.

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The datasets generated during and/or analyzed during the current study are not publicly available, but are available from the corresponding author on reasonable request.

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The association between angiotensin receptor blockers and lung, bladder, and colon cancer development

A 10-year multicentric retrospective Lebanese study

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Abstract

Cardiovascular diseases (CVD) are the leading cause of death globally, followed by cancer. Angiotensin II contributes greatly to CVD pathogenesis, and Angiotensin II receptor blockers (ARBs) constitute a mainstay in hypertension and CVD management. However, the relationship between ARBs and cancer initiation is controversial, with no clear data in Lebanon. Therefore, our study aimed to determine the association between ARBs intake and lung, bladder, and colorectal cancers development in the Lebanese population. A retrospective study was conducted on 709 subjects divided into 2 main groups: Control (subjects without cancer; n = 177), and Cases (patients with cancer (n = 532): lung, bladder, or colorectal), taking ARBs (n = 236, (n = 121 in control and n = 115 in cases)) or not (n = 473). Collected information included the patients demographics, comorbidities, cancer's risk factors, and ARBs dose and duration intake. Bivariate, multivariate, and binary logistic analyses were enrolled. ARBs use was significantly protective (P value = 0.000) against overall cancer development (odds ratio [OR] = 0.127) and against each, lung (OR < 1), bladder (OR < 1), and colorectal cancers (OR < 1). A duration-response relationship was established. This protective effect and the time-dependent relationship remained unchanged after omitting the most relevant risk factors. In summary, a significant overall protective effect of ARBs against lung, bladder and colorectal cancers was found. This beneficial response was time-dependent. These results can guide patients on treatment options and clinicians for informed decision-making.

Abbreviations: ACEIs = angiotensin-converting enzyme inhibitor, Ang II = angiotensin II, ARBs = angiotensin II receptor blockers, AT_1R = angiotensin type 1 receptor, AT_2R = angiotensin type 2 receptor, CAD = coronary artery disease, CRC = colorectal cancer, CVD = cardiovascular diseases, DM = diabetes mellitus, HTN = hypertension, OR = odds ratio, PPI = proton pump inhibitors, RAAS = renin-angiotensin-aldosterone system, RR = relative risk.

Keywords: ARBs, bladder, cancer, cardiovascular diseases, colorectal, hypertension, Lebanon, lung

1. Introduction

Cardiovascular diseases (CVD), which include disorders affecting the heart and blood vessels such as coronary artery disease (CAD), cerebrovascular accidents, peripheral arterial disease, heart failure, etc, are the leading cause of death globally, responsible for approximately 1-3rd of all deaths; predominantly occurring in developing countries.[1]

Systemic arterial hypertension (HTN) was found to be an independent risk factor for CVD development, and its treatment has been proven to reduce CVD-related mortality.[2] The renin-angiotensin-aldosterone system (RAAS), which plays a primary role in the pathogenesis of essential HTN,[3] is activated in volume-depleted states. Angiotensin II (Ang II), the major mediator of RAAS,[3] increases water reabsorption in the kidneys and induces vasoconstriction, thus increasing blood pressure.[3] Sustained RAAS activation will lead to the development of HTN[3] which will cause endothelial dysfunction by creating an imbalance between relaxant (mainly nitric oxide) and contractile (mainly Ang II) endothelial factors. Consequently, a deleterious synergistic endothelial effect consists of diffuse vascular remodeling, collagen synthesis by vascular smooth muscles, fibrosis, and proinflammatory and proatherogenic changes.[4]

YGD, SEH, KGH, IGC, and RTB contributed equally to this work.

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The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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