ISSN: 1745-7580 | Vol_18 | Issue_05

Journal of Immunome Research

Risk factors for prostate cancer in low- and middle-income countries: A systematic review and meta-analysis



Coralea Kappel

McMaster University, Canada

coralea.kappel@medportal.ca

Abstract

Introduction and Objectives: Low- and middle-income countries (LMIC) account for most of the cancer deaths worldwide. In 2016, 70% of nearly 9 million cancer-related deaths were in LMIC. Prostate is the second most common cancer in men. Most of the data on risk factors (rfs) comes from high-income countries (HIC), while the highest estimated prostate cancer (pca) mortality rates are in LMIC. Reducing exposure to prostate cancer rfs may represent an important way to lower pca mortality in LMIC. The objective of this study was to summarize the evidence on modifiable rfs for prostate cancer in LMIC.

Materials and Methods: We conducted a systematic search on MEDLINE, EMBASE and Global Health databases. Two reviewers independently identified case-control or cohort studies from 2010 onwards that studied modifiable rfs for pca in individuals from LMIC with a population of 30 million or more, as defined by the worldbank in January 2021. Disagreements were resolved by a third independent reviewer. Three reviewers independently extracted data including year of publication, study design, prostate ascertainment method, rfs and co-variates. Risk of bias was assessed by the Cochrane risk-of-bias tool. The individual study estimates extracted were pooled when estimates were available for at least two studies.

Results: 5740 studies were identified; 16 studies met inclusion criteria. All were case-control studies except one cohort study, with a median sample size of 445 and 152 patients respectively. Rfs evaluated included smoking, body mass index (BMI), dietary habits, and occupations. Meta-analysis was performed for 9 modifiable rfs. Higher fat intake was associated with a higher risk of pca incidence with an odds ratio (OR) of 3.13 (95% CI 1.33 - 7.33). Current alcohol consumption, current smoking, higher red meat intake, and a BMI greater or equal to 25 kg/m2 were neutral findings. Some dietary habits were associated with a lower risk of pca including a higher fruit intake (OR 0.12, 95% CI 0.02-0.63), tea consumption (OR 0.51, 95% CI 0.32-0.83) and higher vegetable intake (OR 0.48, 95% CI 0.24-0.97).

Conclusions: To our knowledge, this is the largest systematic review exploring rfs for pca in LMIC. Despite similarities with HIC such as adiposity, there is clearly a paucity of data in LMCI considering that these are the countries that represent most cancer-related deaths. Higher fat intake was associated with higher risk of pca while a diet higher in fruits, vegetables and tea intake were important protective factor in LMIC. Future prospective studies will be important to elucidate whether other modifiable rfs for pca specific to LMIC can be identified to inform impactful and cost-effective preventive strategies in these countries.

Uveal melanoma (UM) is the most common primary intraocular malignant tumor in adults and, although its genetic background has been extensively studied, little is known about the contribution of non-coding RNAs (ncRNAs) to its pathogenesis. Indeed, its competitive endogenous RNA (ceRNA) regulatory network comprising microRNAs (miRNAs), long non-coding RNAs (lncRNAs) and mRNAs has been insufficiently explored. Thanks to UM findings from The Cancer Genome Atlas (TCGA), it is now possible to statistically elaborate these data to identify the expression relationships among RNAs and correlative interaction data. In the present work, we propose the VECTOR (uVeal mElanoma Correlation NeTwORk) database, an interactive tool that identifies and visualizes the relationships among RNA molecules, based on the ceRNA model. The VECTOR database contains: (i) the TCGA-derived expression correlation values of miRNA-mRNA, miRNA-lncRNA and lncRNA-mRNA pairs combined with predicted or validated RNA-RNA interactions; (ii) data of sense-antisense sequence overlapping; (iii) correlation values of Transcription Factor (TF)-miRNA, TF-lncRNA, and TF-mRNA pairs associated with ChiPseq data; (iv) expression data of miRNAs, lncRNAs and mRNAs both in UM and physiological tissues. The VECTOR web interface can be queried, by inputting the gene name, to retrieve all the information about RNA signaling and visualize this as a graph. Finally, VECTOR provides a very detailed picture of ceRNA networks in UM and could be a very useful tool for researchers studying RNA signaling in UM.

About university

Hamilton Health Sciences is a community of 15,000 staff, physicians, researchers and volunteers that proudly serves southwestern Ontario residents. We also provide specialized, advanced care to people from across the province.

We're the only hospital in Ontario that cares for all ages, from pre-birth to end-of-life. We offer world-leading expertise in many areas, including cardiac and stroke care, cancer care, palliative care and pediatrics.

We are a world-renowned hospital for healthcare research. We focus daily on improving the quality of care for our patients through innovation and evidence-based practices.

As the largest employer in the Greater Hamilton region, we play a vital role in training the next generation of health professionals in collaboration with our academic partners, including McMaster University and Mohawk College.

Hamilton Health Sciences' Strategic Plan is our North Star. It guides the decisions we make every day about how to invest our precious time and resources, helping us deliver unparalleled value to the communities we serve, now and for years to come.

Our strategy is making it possible for HHS to be a hospital where everyone is a problem-solver. We are a hospital that operates as one seamless system, both within and beyond our walls, a hospital that contributes to a healthier community, and a hospital that is synonymous with innovation and collaboration.

As we continue to evolve to adapt to an ever-changing environment, so will our strategy. We have identified the most important transformation initiatives, corporate projects and in-year objectives we are pursuing as an organization. What has not changed are the pillars that drive our collective efforts.



Biography

Coralea Kappel is currently a third year Internal Medicine Resident at mcmaster University, in Ontario Canada, and previously completed her medical school in Canada's capital at the University of Ottawa. Her passion lies in improving the care of patients with cancer and hopes to pursue a career in Medical Oncology. She has a postdoctoral fellow. The main research topics are immuno-oncology and phytotherapy, focusing the attention on new integrative therapies for cancer treatment. He has published more than 25 papers in reputed journals and he is in involved as Guest editor of two special issues: "Hypoxia and Cancer: Mechanism of Action and Potential Therapeutic Approaches" and "Lipids as Supporting Therapy in Cancer" in IJMS journal. Additionally, he served as reviewer for internation reputed journals. where she is currently PostDoc at the Department of Biomedical and Biotechnological Sciences. Her research is focused on non-coding RNAs (ncRNAs) in cancer models including colorectal cancer and uveal melanoma, aiming to identify ncRNA-mediated molecular mechanisms fostering tumor progression. She has published more than 30 papers in international scientific journals.

References

1. Mercer PF, Woodcock HV, Eley JD, Platé M, Sulikowski MG, et al. (2016) Exploration of a potent PI3 kinase/mTOR inhibitor as a novel anti-fibrotic agent in IPF. Thorax 71: 701-711.
2. Behr J, Neuser P, Prasse A, Kreuter M, Rabe K, et al. (2017) Exploring efficacy and safety of oral Pirfenidone for progressive, non-IPF lung fibrosis (RELIEF)-a randomized, double-blind, placebo-controlled, parallel group, multi-center, phase II trial. BMC pulmonary medicine 17 : 122.
3. Dhooria S, Agarwal R, Gupta D (2015) Is pirfenidone ready for use in non-idiopathic pulmonary fibrosis interstitial lung diseases? Lung India: official organ of Indian Chest Society 32:4.
4. Bendstrup E, Maher TM, Manali ED, Wijsenbeek M (2015) Challenges in the classification of fibrotic ILD. Sarcoidosis vasculitis and diffuse lung disease 32: 4-9.
5. Yamakawa H, Kitamura H, Takemura T, Ikeda S, Sekine A (2018) Prognostic factors and disease behaviour of pathologically proven fibrotic non-specific interstitial pneumonia. Respirology 23: 1032-1040
6. Brown JC, Kraft J, Vega-Olivo M, Galli J, Simpson S. et al. (2017) Rate of decline in fvc in non-ipf pulmonary fibrosis after anti-fibrotic initiation. Inc38. American Thoracic Society A5402-A5402.
7. Nair GB, Matela A, Kurbanov D, Raghu G (2016) Newer developments in idiopathic pulmonary fibrosis in the era of anti-fibrotic medications. Expert review of respiratory medicine 10: 699-711.
8. Wells AU, Brown KK, Flaherty KR, Kolb M, Thannickal VJ (2018) what's in a name? That which we call IPF, by any other name would act the same. ER Journal 51: 1800692
9. Tzouvelekis A, Bouros D (2020) Endotyping of progressive fibrotic interstitial lung diseases: It is the final destination that matters and not the journey. EBioMedicine 1:51
10. Ryerson CJ, Urbania TH, Richeldi L, Mooney JJ, Lee JS, et al. (2013) Prevalence and prognosis of unclassifiable interstitial lung disease. ERJ 42: 750-757
11. Jo HE, Corte TJ, Moodley Y, Levin K, Westall G. Evaluating the interstitial lung disease multidisciplinary meeting: A survey of expert centres. BMC pulmonary medicine 16: 22
12. Adegunsoye A, Strek ME. Therapeutic approach to adult fibrotic lung diseases (2016) Chest 150: 1371-1386.
13. Datta A, Scotton CJ, Chambers RC (2011) Novel therapeutic approaches for pulmonary fibrosis. British j pharmacology 163: 141-712.
14. Prognostic factors and disease behaviour of pathologically proven fibrotic non-specific interstitial pneumonia. Respirology 23: 1032-1040
15. Brown JC, Kraft J, Vega-Olivo M, Galli J, Simpson S. et al. (2017) Rate of decline in fvc in non-ipf pulmonary fibrosis after anti-fibrotic initiation. Inc38. American Thoracic Society A5402-A5402.
16. Nair GB, Matela A, Kurbanov D, Raghu G (2016) Newer developments in idiopathic pulmonary fibrosis in the era of anti-fibrotic medications. Expert review of respiratory medicine 10: 699-711.
17. Wells AU, Brown KK, Flaherty KR, Kolb M, Thannickal VJ (2018) what's in a name? That which we call IPF, by any other name would act the same. ER Journal 51: 1800692