HEMATOLOGY, TRANSFUSION AND CELL THERAPY

www.htct.com.br

REVISÕES E METANALISES - 17° SIMPÓSIO EDWALDO CAMARGO E 1°CONGRESSO CANCERTHERA

THERANOSTICS: NUCLEAR MEDICINE IN PROSTATE CANCER

Marina Camargo ETCHEBEHERE [a],
Helena da Cunha Lopes DE LIMA [b],
Mariana da Cunha Lopes DE LIMA [c],
Elba Cristina Sá de Camargo ETCHEBEHERE [c]

[a] *Faculdade Israelita de Ciências da Saúde Albert Einstein, São Paulo, SP, Brazil*
[b] *Pontifícia Universidade Católica de Campinas, Campinas, SP, Brazil*
[c] *Universidade de Campinas, Campinas, SP, Brazil*

Summary: Theranostic Nuclear Medicine is based on the idea of combining the same molecule (or drug) with different radioisotopes, both for diagnosis and treatment, a concept that emerged in the early 1940s with thyroid diseases. It has since expanded to diseases of higher incidence, such as prostate cancer with several imaging methods used to assess the extent of the disease and the corresponding radiopharmaceuticals used for treatment. For example, by detecting osteoblastic metastases by bone scintigraphy, there are corresponding radiopharmaceuticals with therapeutic properties that eliminate pain from bone metastases, reduce pain of these detected metastases and/or determine overall survival gain. The purpose of this review is to discuss the role and great importance of Theranostic Nuclear Medicine in prostate cancer, addressing the main diagnostic imaging studies with their corresponding treatments, in the Theranostic model. **Conclusão:** Nuclear Medicine plays an increasingly significant role in the diagnostic and therapeutic approach to urological malignancies. The enormous advances in SPECT/CT and especially PET/CT images now allow an assessment of these tumors in the staging, recurrence, and response to treatment settings. Molecular imaging identifies alterations not identified by anatomical imaging and for this reason, PET/CT images are becoming increasingly indispensable in specific clinical situations and with precise indications according to the type of urological neoplasia. Theranostic Nuclear Medicine is rapidly evolving in prostate cancer and is a well-established and routine treatment option. Additionally, it is a personalized therapy. The concept of using the same molecule for diagnosis and therapy opened the door to guided and effective treatment, increasing patient survival while maintaining an excellent quality of life and without serious side effects, which is a challenge in metastatic cancer treatments.

Keywords: 18F-fluoride, FDG, Nuclear medicine, PET/CT, PSMA.

https://doi.org/10.1016/j.htct.2024.04.111

EFFICACY AND SAFETY OF RADIUM-223 AND STANDARD OF CARE IN PATIENTS WITH BREAST CANCER AND BONE METASTASIS: A SYSTEMATIC REVIEW AND META-ANALYSIS

Felipe Alves MOURATO [a],
Lucas Yuji Gomes ITIKAWA [b],
Débora Mendes BRAUN [c],
Simone Cristina Soares BRANDÃO [d],
Lauro WICHERT-ANA [b]

[a] *Empresa Brasileira de Serviços Hospitalares (EBSERH), Hospital das Clínicas da Universidade Federal de Pernambuco (HC-UFPE), Recife, PE, Brazil*
[b] *Universidade de São Paulo, Ribeirão Preto, SP, Brazil*
[c] *Universidade de Pernambuco (UPE), Recife, PE, Brazil*
[d] *Hospital das Clínicas da Universidade Federal de Pernambuco (HC-UFPE), Recife, PE, Brazil*

Summary: Radium-223 (Ra-223) has been used to treat metastatic bone disease in prostate cancer, improving overall survival and quality of life. Breast cancer often presents bone metastasis too, but it is often associated with other sites of disease. In such cases, the addition of Ra-223 to the standard of care (SC) may be beneficial. Therefore, our objective is to determine if the use of Radium-223 plus SC is beneficial for metastatic bone breast cancer patients through a systematic

2531-1379/

review and meta-analysis. A comprehensive search was conducted across MEDLINE, EMBASE, and CENTRAL databases. The search strategy included the following terms: "Breast cancer" AND "Radium-223". The selection criteria encompassed both single-arm and randomized controlled trials (RCT). MedCalc® Statistical Software was used. Hazard ratios (HR) were preferred. Odds ratios (OR) or Relative risk (RR) were used when HR was not disponible. For single-arm studies, a proportion meta-analysis was performed. Random-effects methods were used. The initial search yielded 349 articles, 28 articles were reviewed with full-text, and 5 were considered eligible (3 RCT and 2 single-arm studies). SC therapy included: capecitabine, paclitaxel, exemestane plus everolimus and hormonal therapy. Overall, the group submitted to Ra-223 showed a trend to have better symptomatic skeletal event-free survival – SSEFS - (HR: 0.855, CI: 0.643-1.138) and pain improvement (OR: 1.308. CI: 0.780-2.196), but without statistical significance. The pooled analysis showed no difference between arms for serious adverse effects (RR: 0.836. CI: 0.331-2.112). The proportion of SAE in patients submitted to Ra-223 plus SC was 20.1% (CI: 3.6-45.3%). **Conclusão:** Ra-223 plus SC in bone metastatic breast cancer patients showed a trend to better SSEFS and pain improvement. However, the low number of RCT studies and the high heterogeneity of SC are great limitations. Results from ongoing RCT (everolimus and avelumab) can change this scenario.

Keywords: Breast cancer, Meta-analysis., Radium-223, Systematic review.

https://doi.org/10.1016/j.htct.2024.04.112

EPSTEIN-BARR VIRUS AND LYMPHOMA IN RHEUMATOID ARTHRITIS: PREVALENCE AND ASSOCIATION WITH METHOTREXATE. RESULT OF SYSTEMATIC REVIEW OF OBSERVATIONAL STUDIES

Camila Frade OLIVEIRA,
Guilherme Brasil Duffles AMARANTE,
Alisson Aliel Vigano PUGLIESI,
Cármino Antônio SOUZA

Universidade Estadual de Campinas (UNICAMP), Campinas, SP, Brazil

Summary: Introduction: rheumatoid arthritis (RA) is an autoimmune, inflammatory, and systemic disease, whose pathogenesis involves both the innate and adaptive immune systems. Its global prevalence varies from 0,4% to 1,3%, and the incidence increases with age. Given the increase in the general life expectancy of the population, the number of elderly patients with RA is growing, as are the complications of the disease. Several studies have demonstrated that patients with RA are at increased risk of developing lymphoproliferative diseases when compared to the general population. Some theories have emerged to explain this association, with emphasis on the role of the Epstein-Barr virus (EBV) and immunosuppressive drugs, especially methotrexate (MTX), the medication most frequently used to treat the disease. Methodology: Pubmed, Cochrane, Lilacs, Scopus, Embase and Web of Science databases were systematically reviewed in September 2023, without language or publication date restrictions. We searched for observational studies that associated EBV, RA, methotrexate and lymphoma. The recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and the Cochrane Collaboration were used. **Results:** the analysis of 10 studies published between 2001 and 2022, involving 674 patients with RA and lymphoma, demonstrated that 77,3% used MTX and 27,4% were positive for EBV. The most common lymphoma was diffuse large B-cell lymphoma (DLBCL). The prevalence of EBV in DLBCL patients ranges from 5-15%, compared to 27,4% in the present study. This histological subtype was also associated with lower rates of spontaneous remission and worse outcomes. The prevalence of EBV in RA patients not treated with MTX was 7,7%, compared to 46% in patients who used the drug. Spontaneous remission rates (sRR) after MTX suspension (without associated immunochemotherapy) were variable (22,9% to 69,2%), but higher in the EBV-positive group. **Discussion:** in RA patients treated with MTX, EBV is expected to be activated through 3 mechanisms. The first of these involves AR itself. Patients with the disease have a deficiency of CD8+ T cells and, consequently, a high EBV burden due to immunodeficiency. The second mechanism is the suppression of T cell activation and adhesion by MTX. The third mechanism is direct reactivation of latent EBV by MTX. Thus, MTX withdrawal appears to result in recovery of immune surveillance and interruption of the EBV-induced tumor pathway. sRR with MTX withdraw were higher in EBV-positive group and could indicate that the virus is associated with a better outcome. The different prognosis of EBV-negative cases suggests that these tumors have a distinct biology. **Conclusão:** Conclusion: our systematic review found a high prevalence of EBV positivity in patients with RA and lymphoma, suggesting an important role for the virus in lymphomagenesis in this specific population. Due to the frequent use of MTX in the RA population, data from the systematic review alone are not capable of attributing the drug's causality to other confounding factors.

Keywords: Epstein-Barr, Lymphoma, Methotrexate, Rheumatoid arthritis.

https://doi.org/10.1016/j.htct.2024.04.113

TRENDS IN RADIOISOTOPES AND RADIOLABELING METHODS

Fabio Luiz Navarro MARQUES

Faculdade de Medicina da Universidade de São Paulo, São Paulo, SP, Brasil

Summary: Radiopharmaceutical research and bioscience or medical applications have changed during the decades in the function of available technologies for radioisotope production and imaging detection technologies. In the 1940s to 1960s year, radioisotopes were supplied by reactor production, such as 131I for thyroid uptake study, 197Hg, 203Hg-chlormerodrin for brain scans, 198Au-colloid for liver scans, and 85Sr-chloride for the bone scans. In the late 1960s, with the