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Evaluation of the Prevalence of Side Effects of Chemical Castration by LHRH Analogues in a Cohort of Moroccan Patients with Prostate Cancer

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Abstract **Original Research Article**

***Background*:** Chemical castration by LHRH analogues is a cornerstone treatment for advanced prostate cancer, but it is associated with numerous side effects impacting quality of life. ***Objective*:** To evaluate the prevalence of these effects in a cohort of Moroccan patients. ***Methods*:** Retrospective, single-center study of 75 patients who received chemical castration for at least six months, from January 2023 to December 2024, with data extracted from medical records. ***Results*:** The most frequent side effects were hot flashes (82.7%) and erectile dysfunction (73.3%). Asthenia and mood disorders were observed in 64% and 50.7% of patients, respectively. Musculoskeletal pain was present in 45.3%, gynecomastia in 24%, and weight gain in approximately 37%. ***Conclusion*:** These results highlight the need for rigorous monitoring and a personalized approach to the management of side effects related to chemical castration by LHRH analogues, with the involvement of multidisciplinary healthcare professionals.

Keywords: Prostate Cancer, Androgen Deprivation Therapy, Side Effects.

INTRODUCTION

Prostate cancer represents a major public health challenge worldwide, characterized by a constantly increasing incidence [1]. Hormone therapy, and more specifically, androgen deprivation achieved through chemical castration, remains an essential pillar in the treatment of advanced and metastatic stages of this disease. LHRH (Luteinizing Hormone-Releasing Hormone) analogues, such as triptorelin and goserelin, are widely prescribed to induce this chemical castration. However, this therapeutic strategy is frequently associated with a range of adverse effects, potentially debilitating to the patients' quality of life. These effects include hot flashes, erectile dysfunction, asthenia, mood disorders, musculoskeletal pain, as well as metabolic and bone complications [2]. Therefore, it is of paramount importance to precisely evaluate the prevalence of these side effects in order to optimize the overall management of patients and individualize therapeutic strategies. The present retrospective study aims to determine the occurrence of these adverse events in a population of patients treated in two Moroccan military hospitals.

MATERIALS AND METHODS

Study Design: This is a retrospective, single-center, observational study.

Study Population:

The cohort includes 75 patients diagnosed with prostate cancer and who received hormone therapy by chemical castration (based on triptorelin or goserelin) for a minimum duration of six months, between January 2023 and December 2024. Recruitment was carried out in the oncology departments of the Moulay Ismail Military Hospital of Meknès and the Mohammed V Military Teaching Hospital of Rabat.

Data Collection:

Data were extracted retrospectively from patients' medical records. The collected variables include: demographic data (age, body mass index), tumor stage according to the TNM classification, Gleason score, the type of LHRH analogue administered (triptorelin or goserelin), the duration of chemical castration, and all clinically documented side effects. The presence of side effects was determined by the attending physician's notation on the patient's clinical record and were collected and categorized in accordance

with the Common Terminology Criteria for Adverse Events version 5.0 (CTCAE v5.0).

Statistical Analysis: Statistical analysis was performed using Microsoft Excel software (version 2019).

RESULTS

Patient Characteristics:

The average age of the cohort (n = 75) was 65 ± 8.5 years. In terms of TNM classification, the distribution of patients by stage was as follows: localized stage (0%), locally advanced stage (10%), metastatic stage (65%). The majority of patients (80%, n = 60) received triptorelin, while 20% (n = 15) were treated with goserelin.

Prevalence of Side Effects:

The most frequently reported side effects were hot flashes (82.7% of patients, n = 62) and erectile dysfunction (73.3%, n = 55). Other frequently observed adverse effects included asthenia (64%, n = 48) and mood disorders (50.7%, n = 38). Musculoskeletal pain, weight gain, and gynecomastia were reported by 45.3%, 37.3%, and 24% of patients, respectively. Metabolic disorders and decreased bone density were less frequent, affecting 20% and 13.3% of the cohort, respectively (Figure 1).

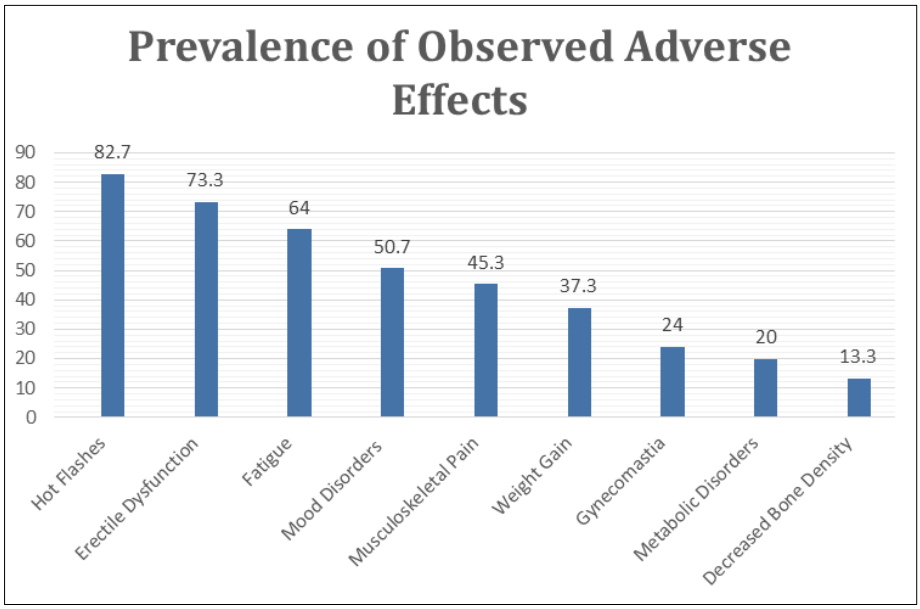

Figure 1: Prevalence of Adverse Effects Observed during Chemical Castration (percentage)

DISCUSSION

Anti-androgen hormone therapy (AHT) remains an essential treatment for prostate cancer, although its long-term use is associated with several adverse effects that impact patients' health and quality of life [1, 2]. Our results, from a single-center, retrospective observational study including 75 patients with prostate cancer who received hormone therapy by chemical castration for at least six months, corroborate the literature data. Our study revealed that the most frequent side effects were hot flashes (82.7%) and erectile dysfunction (73.3%), in accordance with reported prevalences [6]. AHT leads to a decrease in bone mineral density, increasing the risk of osteoporosis and fractures, with studies reporting a relative risk of 1.39 for bone fractures in patients on AHT [3]. In our cohort, 13.3% of patients presented with a decrease in bone density. In addition, AHT is linked to metabolic disturbances such as weight gain (37.3% in our study), increased fat mass, decreased muscle mass, and insulin resistance, contributing to a higher incidence of diabetes and unfavorable changes in the lipid profile [2-5]. Fifteen of our patients (20%) presented with metabolic disorders. Concerns also exist regarding cardiovascular health, with studies suggesting an increased risk of cardiovascular morbidity, including coronary heart disease and acute myocardial infarction, although the impact on cardiovascular mortality remains uncertain [1-3]. Beyond erectile dysfunction, fatigue and mood disorders were also frequent in our cohort, affecting 64% and 50.7% of our sample, respectively. Other effects such as musculoskeletal pain, weight gain, and gynecomastia are more present compared to pre-existing data possibly due to population differences [6]. Certain groups of patients, notably the elderly, those with a history of cardiovascular disease, osteoporosis, metabolic syndrome, cognitive impairment, or a history of psychological disorders, are particularly vulnerable to these adverse effects [2-7]. To mitigate these risks and improve quality of life, effective management strategies are essential. For bone health, bisphosphonates or denosumab are recommended, as well as regular assessments of bone mineral density, weight-bearing exercises, and supplementation with calcium and vitamin D [8]. Cardiovascular health requires regular risk assessments and lifestyle

modifications, with pharmacological interventions as needed [7-10]. Metabolic changes are managed through a combination of lifestyle interventions and pharmacotherapy, with regular monitoring of glucose levels and lipid profiles [2-9]. Cognitive decline and psychological effects are addressed through cognitive stimulation exercises, psychological support, counseling, and, if necessary, pharmacological treatments [9, 10]. Therefore, a multidisciplinary approach is crucial to optimize the management of patients on long-term AHT, emphasizing proactive monitoring and personalized management strategies to mitigate the adverse effects of therapy.

CONCLUSION

Chemical castration by LHRH analogues, although fundamental in the management of advanced prostate cancer, is associated with a non-negligible side effect profile, significantly impacting the quality of life of patients. The prevalence study conducted in a Moroccan cohort highlights the need for proactive monitoring and individualized management of these adverse effects. Awareness of patients and healthcare professionals, as well as a multidisciplinary approach involving oncologists, urologists, endocrinologists, and psychologists, are essential to optimize the well-being of patients throughout their therapeutic journey.

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Conflict of Interest: The authors declare that they have no conflict of interest.

Consent: Informed consent was obtained from the patients for this publication.

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