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Prevalence of depression in patients with metastatic prostate adenocarcinoma undergoing castration Experience of the medical oncology department of the CHU HASSAN II in Fes, 100 cases reported

Abstract:

Introduction: Prostate cancer is the most common cancer in men, and psychological symptoms such as depression frequently affect patients. Castration, whether medical or surgical, is often part of a combined therapeutic approach, including chemotherapy and/or new-generation hormone therapy. Castration lowers testosterone levels, which can contribute to depressive symptoms, as testosterone plays a role in regulating mood and emotional well-being. Assessing and managing the psychological impact of castration is therefore essential to ensure comprehensive patient care. This study aimed to determine the prevalence of depression in patients with metastatic prostate cancer undergoing medical castration.

Materials and Methods: We conducted a descriptive, and analytical, cross-sectional study including 100 patients with metastatic prostate cancer receiving medical castration at the Medical Oncology Department of Hassan II University Hospital, Fes. Data were collected through structured clinical interviews conducted by a psychologist, with informed consent obtained from all participants. The Beck Depression Inventory, adapted to the Moroccan context, was used to quantitatively assess depressive symptoms. This 21-item questionnaire rates the severity of depression on a 0–3 scale for each symptom. Based on depression severity, patients received tailored interventions ranging from supportive psychotherapy to combined psychotherapy and antidepressant treatments, coordinated by psychiatrists and psychotherapists.

Results: Among the 100 patients, the most common age group was 45–60 years (43%). Educational levels were: university 18%, secondary 30%, primary 32%, and illiterate 20%. Marital status: married 56%, divorced 21%, widowed 12%, single 11%. Residential areas: rural 54%, urban 46%. Depression prevalence was: no depression 9%, mild mood disturbance 26%, intermittent depression 18%, moderate 41%, severe 4%, and extreme 2%.

Conclusion: Depression is a common psychological problem in cancer patients. Our study highlights that depressive symptoms are prevalent among patients with metastatic prostate cancer undergoing castration, emphasizing the importance of routine screening and tailored psychological management in this population.

Keywords: Metastatic prostate cancer, Medical castration, Depression, Psychological assessment, Mental health.

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39

40

41 **Main text:**42 **Introduction:**

43 Prostate cancer is the most common cancer in men and the second most common cause of
44 cancer-related death¹. Depression in men with prostate cancer has become a significant
45 problem, with a prevalence of 16-30%². Notably, almost a fifth of men with prostate
46 cancer become depressed³. Despite these troubling effects of depression on many prostate
47 cancer patients, the scale of the problem is largely unrecognized and underestimated⁴.

48 Depression in prostate cancer patients has been associated with suicide, unpleasant
49 lifestyle changes, poor treatment compliance, and poorer long-term outcomes^{5,6}.

50 Androgens and their receptors play an important role in the progression of prostate
51 cancer. Anti-androgen hormone therapy (AHT), either chemical castration (LH-RH
52 analogues) or surgical castration (bilateral orchiectomy), is the mainstay of treatment for
53 metastatic prostate cancer⁷.

54 It is therefore essential to assess and manage the psychological aspects of castration
55 treatment to ensure optimal overall management of the prostate cancer patient.

56 The aim of this study was to calculate the prevalence of depression in patients with
57 metastatic prostate adenocarcinoma undergoing medical castration.

58

59 **Materials and methods:**

60 This is a descriptive and analytical cross-sectional study of 100 patients diagnosed with
61 metastatic prostate cancer undergoing medical castration collected at the medical
62 oncology department of the CHU HASSAN II in Fes.

63 Data were collected through clinical interviews with study participants. Informed consent
64 was obtained from each participant prior to the interviews.

65 Patients who refused to participate and other types of cancer were excluded.

66 The interviews were conducted by a psychologist who followed a standardized procedure
67 to ensure consistency and accuracy of data collection. Participants were asked to
68 complete a questionnaire (Beck Depression Inventory) quantitatively assessing the
69 intensity of depressive feelings. This questionnaire is adapted to the Moroccan context

and comprises 21 symptom and attitude items describing the manifestations of depression, graded from 0 to 3 by a series of 4 statements, reflecting the degree of severity of the symptom. Depending on the severity of the depression, patients benefited from different interventions, ranging from psychological support through supportive psychotherapy to combined treatments combining psychotherapy and antidepressants. This care was orchestrated by specialized psychiatrists and psychotherapists, ensuring a personalized therapeutic approach tailored to each patient's individual needs.

Data analysis was carried out using Statistical Package for Statistical Systems (SPSS) software.

Results:

A total of 100 patients with metastatic castration-resistant prostate cancer were recruited.

The data collected were classified according to categorical variables.

The most common age group was 45-60 years (43%). Regarding the patients' educational levels, 18% had a university degree, 30% had a high school diploma, 32% had a primary school education, and 20% were illiterate.

In terms of marital status, 56% of patients were married, 21% were divorced, 12% were widowed, and 11% were single.

Fifty-four percent of patients came from rural areas, and 46% came from urban areas.

In terms of income level, 16% had an income of less than 1,000 dirhams, 35% had an income of less than 3,000 dirhams, and 49% had an income of more than 5,000 dirhams.

12% of patients had been diagnosed less than three months ago, 35% between three and six months ago, and 53% more than six months ago.

Nine percent of patients were not depressed, 26% had mild mood disturbances, 18% had intermittent depression, 41% had moderate depression, 4% had severe depression, and 2% had extreme depression.

The average total score on the Beck Depression Inventory was 20.32, with extremes ranging from 4 to 45 and a standard deviation of 7.58, which falls between intermittent depression and moderate depression.

Statistically insignificant differences were observed in the depression test results based on age group (p-value=0.68), marital status (p-value=0.41), income (p-value=0.058), and onset of illness (p-value=0.51).

102 **Discussion:**

103 In our study, the rate of depression calculated using the Beck Inventory was 47%. This
104 rate is higher than the values reported in the literature. A meta-analysis including 27
105 studies with a sample of more than 4,000 patients with localized or advanced prostate
106 cancer estimated that the prevalence rate of clinically significant depression was between
107 15% and 18%⁸.

108 Another meta-analysis of observational studies, which included 655,149 patients in 11
109 studies, showed that the prevalence of depressive disorders is 5.81%⁹.

110 In an earlier meta-analysis, the overall average prevalence of depression in cancer
111 patients during or after treatment ranged from 8% to 24% depending on the instruments
112 used, the type of cancer, and the stage of treatment¹⁰.

113 For this group of patients, depression can stem from many causes, including
114 psychological distress related to the diagnosis, both in the short and long term, and the
115 pathophysiology of the cancer in question¹¹. Not to mention the impact of androgen
116 suppression on patients' mood, a study evaluating the effect of anti-androgen treatment in
117 prostate cancer patients compared to healthy control patients without prostate cancer
118 showed significant changes in self-reported mood, including an increase in depression,
119 which is reversible within three months of stopping treatment¹². Another study also
120 showed that anti-androgen therapy is linked to depression and a reduced quality of life in
121 patients with prostate cancer¹³. It should be noted that depression can occur at various
122 stages of the cancer journey¹⁴.

123

124 **Conclusion:**

125 Our study, like all studies conducted on depression and prostate cancer, has highlighted
126 the importance of depression in this population, suggesting the need to screen these
127 patients for depression in order to offer them appropriate therapy.

128 **Acknowledgments:**

129 This study did not receive any external funding. I would like to thank all the staff of the Medical
130 Oncology Department at CHU Hassan II for their support and valuable assistance during this
131 study.

132

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174 **Tables:**

175 Tab. 1: Participants' mean depression scores as a function of age

176

Age	N	%	Depression	Standard deviation	p-value
<45 years	19	19%	21,16	6,457	0,685
45-60 years	43	43%	20,67	8,747	
>60 years	38	38%	19,50	6,753	
Total	100	100%	20,32	7,585	

177

178 Tab. 2: Participants' mean depression scores as a function of level of education

179

level of education	N	%	Depression	Standard deviation	p-value
illiterate	20	20%	20,00	7,284	0,991
primary school education	32	32%	20,62	8,530	
high school diploma	30	30%	20,13	6,279	
university degree	18	18%	20,44	8,685	
Total	100	100%	20,32	7,585	

180

181 Tab. 3: Participants' mean depression scores as a function of marital status

182

Marital status	N	%	Depression	Standard deviation	p-value
Single	11	11%	21,36	5,732	0,419
Married	56	56%	19,25	8,147	
Divorced	21	21%	22,33	7,398	
widowed	12	12%	20,83	6,450	
Total	100	100%	20,32	7,585	

183

184 Tab. 4: Participants' mean depression scores as a function of income

185

Income	N	%	Depression	Standard deviation	p-value
<1000dhs	16	16%	16,19	5,576	0,058
<3000dhs	35	35%	21,14	7,441	
>5000dhs	49	49%	21,08	7,934	
Total	100	100%	20,32	7,585	

186

187 Tab. 5: Participants' mean depression scores as a function of habitat environment

188

Habitat environment	N	%	Depression	Standard deviation	p-value
Rural	54	54%	20,31	6,933	0,994
Urban	46	46%	20,33	8,364	
Total	100	100%	20,32	7,585	

189

190 Tab. 6: Participants' mean depression scores as a function of onset of the disease

191

onset of the disease	N	%	Depression	Standard deviation	p-value
<3months	12	12%	22,58	6,082	0,516
3-6months	35	35%	19,66	8,253	
>6months	53	53%	20,25	7,462	
Total	100	100%	20,32	7,585	

192

193 Tab. 7: Beck Depression Inventory (BDI)

194

Total score for the 21 items	Level of depression
1-10	These ups and downs are considered normal.
11-16	Slightmooddisturbance
17-20	Intermittent depression
21-30	Moderatedepression
31-40	Severedepression
> 40	Extremedepression

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