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Management of Erectile Dysfunction in Chronic Kidney Failure in Congo

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Abstract: Objective: To evaluate the management of erectile dysfunction (ED) in chronic kidney failure (CKF) patients in Congo. Patients and method: This was a cross-sectional study with prospective data collection over a period of 9 months, carried out in the nephrology departments of three hospitals in Congo. The IIEF-5 score was used to assess erectile function. We included all CRD patients with ED over 18 years of age. Results: The mean age of the patients was 54.4±(range: 20 years and 81 years). Cardiovascular risk factors were dominated by high blood pressure which accounted for 86 patients (91.5%). BMI was normal in 76 patients (80%). Grade 2 hypertension was noted in 47 patients (49.47%). Two patients (2%) did not have secondary sexual characteristics. The average duration of CKF was 3 years. The onset of ED was preceded by CKF in 92 cases (96.8%). The onset of ED was gradual in 72 cases (78.2%). The circumstance of the occurrence of ED was found in five cases (5.2%). Penile stiffness was low in 86 cases (90.5%). Sixty-four patients (67.4%) did not have a nocturnal erection. Other associated sexual disorders were decreased libido in 46 cases (48.4%), anorgasmia in 53 cases (55.8%) and premature ejaculation in 47 cases (49.47%). The mean IIEF 5 score was 11.38±4.44. Erectile dysfunction was severe in 43 cases (45.2%). Examination of the penis was normal in all cases. Erectile dysfunction was difficult to bear in 51 cases (53.7%). The testosterone level was between 5.5-32 nmol / L in 44 patients (68.8%). FSH and LH levels were increased in 60% of cases. The prolactin level between 1.8 - 29.2 micrograms / l in 14 cases (70%). The medical treatment of erectile dysfunction concerned 36 patients (37.8%). Conclusion: ED has psychological consequences that accentuate the suffering of patients. Modification of these risk factors must be undertaken early. IPDE5 have improved the management of erectile dysfunction

Keywords: Chronic Kidney Failure, Erectile Dysfunction, Congo

1. Introduction

Erectile dysfunction (ED) is defined as the inability to achieve and / or maintain an erection sufficient to allow satisfactory intercourse [1]. It is a common pathology in the general population [2]. In Western countries, 20 to 45% of men are or will one day be affected by erectile dysfunction [3]. In Africa, its frequency varies from country to country in the range of 14% to 66% [4-6]. Several etiological factors are involved in its occurrence: age, high blood pressure, diabetes, smoking, obesity, psychiatric conditions and any chronic disease [2].

The global prevalence of ED in patients with chronic kidney disease (CKD) is high, ranging between 50 and 70% [7, 8]. In Africa, few studies have evaluated ED in renal failure. In Nigeria, Oladiji reports a prevalence of 31.5% [9] in a hospital study. The origin of erectile dysfunction in chronic kidney disease is multifactorial. It most often combines organic and psychogenic factors. Organic factors associate an uremic environment, anemia, peripheral neuropathy responsible for dysautonomia, and peripheral

vascular involvement. In addition to these organic disorders, there is an anxiety-depressive syndrome [10]. All this has the corollary of a profound and silent deterioration in the quality of life in an African context where talking about one's sexuality is still a taboo subject [6]. Often mistakenly regarded as a secondary problem in patients with CKD, ED must however be considered in the overall management of the patient. All the more so since the progress made in the fields of extra-renal purification and renal transplantation have led to a marked improvement in the quality of life of CKF patients [2]. Therefore, the aim of this study was to evaluate the management of ED in CKF patients in Congo.

2. Patients and Method

This was a cross-sectional study carried out from January 1, 2019 to September 15, 2019 (9 months) in the nephrology departments of the Teaching Hospital of Brazzaville, the Adolph Cissé Hospital in Pointe-Noire and the Lucie Edith BONGO Hospital in Oyo. The study population consisted of CKF patients followed on an outpatient basis or hospitalized during the study period and presenting with ED. The inclusion criteria were an age greater than 18 and written consent. Patients with uremic encephalopathy were not included in the study. Confidentiality was respected according to the 1975 Helsinki Protocol revised in 2013 [11].

The diagnosis of ED was made on the basis of the interview. Physical examination and additional patient examinations were performed to identify the etiology of ED and / or CKF. The International Index of Erectile Function 5 (IIEF-5) score established by Rosen in 1997 [12] was used to assess erectile function. This score has five parts each with five questions rated from 1 to 5 explores the quality of sex, desire for sex and overall satisfaction with sex. For interpretation, the variables were: severe erectile dysfunction (score 5-10), moderate (11-15), mild (16-20), or normal erectile function (21-25).

The variables studied were epidemiological: age, marital status, occupation, cardiovascular risk factors; clinical: personal history, body mass index (BMI), blood pressure, complications of high blood pressure, secondary sexual characteristics, duration of renal failure, staging of chronic renal failure, the circumstance of the erectile dysfunction, the mode of installation, the other associated sexual disorders, the variability of the symptoms, the degree of severity, the rigidity of the penis, the psychological repercussions of the erectile dysfunction, the testosteronemia, the levels plasma FSH, LH and prolactin, serum creatinine, azotemia, blood sugar and full blood count; therapeutic: drug treatment of ED and dialysis.

Data collection was done from a survey sheet. The data were processed with Microsoft Excel 2016 and SPSS version 18. The qualitative variables were presented in numbers (n) and percentage (%); quantitative variables were averaged±standard deviation. Student test was used for the comparison of the means, the significance level for the comparisons was set at $p<0.05$.

3. Results

3.1. Frequency

A total of 101 patients were included, including 95 (94.1%) for ED.

3.2. Population Characteristics

The mean age was 54.4±13.7 years (range: 20 and 81). The distribution of patients according to age groups has been represented by figure 1. The distribution of patients according to the characteristics of the population is given in Table 1.

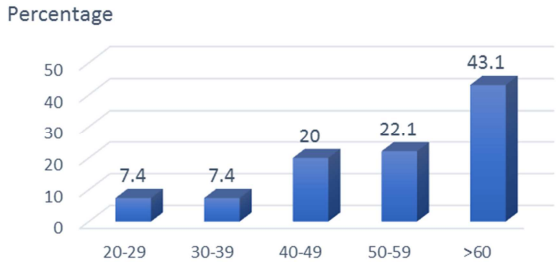

Figure 1. *Distribution of patients with ED according to age group.*

Table 1. *Distribution of patients according to the characteristics of the population.*

Population characteristics		Effective	Percentage
Marital status	Married	44	46.3
	Widowers	21	22.1
	Singles	5	5.3
	Free Union	25	26.3
Surgical history	Pelvic trauma	3	3
	Prostate adenomectomy	2	2
Cardiovascular risk factors	HTA	86	91.5
	Diabetes	40	42
	Dyslipidemia	3	3.2
	Smoking	7	7.4
	Obesity	6	6.3
	Sedentary lifestyle	4	4.2
Body mass index (BMI)	Normal	76	80
	Thinness	4	4.2
	Overweight	9	9.5
	Obesity	6	6.3

Population characteristics		Effective	Percentage
Blood pressure	Normal	17	18
	HTA on duty 1	28	29.5
	Grade 2 hypertension	47	49.5
	Grade 3 hypertension	8	3
Vascular complications of diabetes and hypertension	Heart failure	38	40
	Stroke	11	11.7
	Retinopathy	57	60.6
	Pelvic limb arteriti	2	2
Secondary sex characteristics	Absence	2	2

3.3. Chronic Kidney Failure

The mean duration of CKF was 3±2 years (range of 3 months and 8 years). Table 2 shows the distribution of patients according to glomerular filtration rate and stage of CKF.

Table 2. *Distribution of patients according to glomerular filtration rate and stage of CKF.*

IRC Stages	GFR*	Effective	Percentage
Stage 1	≥90 ml/min/1.73m²	1	1
Stage 2	60-89 ml/min/1.73m²	2	2
Stage 3A	45-59 ml/min/1.73m²	14	14.7
Stage 3B	30-44 ml/min/1.73m²	13	13.7
Stage 4	15-29 ml/min/1.73m²	25	26.3
Stage 5	<15 ml/min/1.73m²	40	42.1
Total		95	100

*GFR: Glomerular filtration rate.

3.4. Erectile Dysfunction

The onset of ED was preceded by CKF in 92 cases (96.8%) and was followed by CKF in three cases (3%). The onset of ED was gradual in 72 cases (78.2%) and abrupt in 20 cases (21.8%). The circumstance of occurrence of ED was found in five cases (5.2%). These were the death of the spouse in three cases (3%) and the divorce in two cases (2%). Penile stiffness was low in 86 cases (90.5%) and absent in 35 cases (36.8%). In 64 cases (67.4%), the patients did not have a nocturnal erection. Other associated sexual disorders were decreased libido in 46 cases (48.4%), anorgasmia in 53 cases (55.8%) and premature ejaculation in 47 cases (49.47%). The variability of ED depending on the circumstances was found in 63 cases (66.3%). Periodic dysfunction was noted in 38 cases (60%), in 22 cases (34.9%) partner dependent and in three cases (4.7%) position dependent. The mean IIEF 5 score was 11.38±4 (range: 3 and 21). ED was mild in 18 cases (18.9%), moderate in 34 cases (35.7%) and severe in 43 cases (45.2%). The examination of the penis was normal in all cases. Regarding the psychological impact, erectile dysfunction was bearable in 9 cases (9.5%), almost bearable in 21 cases (22.1%), hardly bearable in 51 cases (53.7%), unbearable in 12 cases (12, 6%), quite unbearable in two cases (2.1%).

Paraclinically, testosterone, FSH and LH assay were reported in 64 cases (67.4%). Prolactin assay was performed in 20 cases (21%). The mean serum creatinine was 66.89±52.68 mg / l (range: 13 and 236 mg / l). Blood urea was measured in 86 cases (90.5%). Blood glucose was achieved in 81 cases (85.2%). Complete blood counts were performed in all patients. The results of the biological assessment are given in Table 3.

Table 3. *Distribution of patients according to the results of the biological assessment.*

Biological assessment		Effective	Percentage
Testosteronemia	8,2 – 34.6 nmol/l	20	31.2
	5.5-32 nmol/l	44	68.8
FSH	3-15U/L	26	40
	>15 UL/l	38	60
LH	2-12UL/l	26	40
	>12UL/L	38	60
Prolactininemia	1.8 – 29.2 µg/l	14	70
	30 – 31 µg/l	6	30
Blood urea nitrogen	4 – 6 mmol/l	27	31.4
	8 – 8.1 mmol/l.	59	68.6
Blood sugar	0.7 – 1.2 g/dl	56	69.1
	1.02- 3 g/dl	25	30.9
Blood count	12-14g/dl	17	17.8
	6-10g/dl	78	88.2

3.5. Treatment of Erectile Dysfunction

Drug treatment for ED was used in 36 cases (37.8%). Yohimbine was used in 11 cases (27.7%), phosphodièsterase inhibitor type 5 (IPDE5) in 21 cases (58.3%) and androgen in four cases (11%). Psychotherapy concerned 52 patients (55%). The mean duration of treatment for ED was 27.6±4.5 days (range: 15 and 30 days); but for the most part, the treatment was taken on an ad hoc basis before intercourse. Tolerance was good in 92 cases (96.8%). In three cases, the patients had palpitations and dizziness after taking yohimbine. Dialysis was used in 23 cases (24.2%). Tables 4 and 5 report the response of patients to treatment and the effectiveness of the various drugs.

Table 4. *Therapeutic evaluation according to the type of treatment for erectile dysfunction.*

	IPDE-5		Androgen		Yohimbine		Psychotherapy	
Good	5	50	1	100	-	-	14	70
Weak	4	40	-	-	1	20	2	10
Absent	1	10	-	-	1	20	2	10

Table 5. *Comparison of the efficacy of ED drugs according to the IIEF-5 score before and after treatment.*

	IIEF before treatment	IIEF after treatment	P
Psychotherapy	12.1±4.3	19.3±5.9	0.2
IPDE-5	9.3±3	21.7±1.2	0.1
Androgen	26.12±1.15	35.5±6.9	0.4
Yohimbine	9.8±2.3	11.8±3.9	0.3

4. Discussion

Duration of onset: The mean duration of CRF in our study was 3 years. This duration is identical to that found by Costa [13]. Oueslati [14] reports an average duration greater than ours of 7.7 years. These same authors agree that the duration of the course of renal failure is linked to a higher prevalence of ED.

Mode of installation: In the majority of cases (78.2%) the mode of installation of the ED in our study was gradual. This observation confirms the predominant organic character of ED in renal failure.

History: In our study, all patients with a history of pelvic trauma had ED. The occurrence of erectile dysfunction would in this case be related to the nerve damage [15]. A history of prostatic adenomectomy was found in 2% of cases in our study. We did not find a link between a history of prostatic adenomectomy and the occurrence of erectile dysfunction. This finding is identical to that reported by Bouya in the general population [6].

Associated sexual disorders: Other sexual disorders associated with such low libido, anorgasmia and premature ejaculation were found in our study. The existence of these disorders has been reported in the general population by other authors [16]. Kidney failure and erectile dysfunction are two conditions that can cause psychological damage causing a profound deterioration in self-esteem that can explain the occurrence of these disorders. A drop in testosterone was noted in 68.7% of cases. Several authors have reported that CRF is often associated with a decrease in serum free and total testosterone levels [7, 17, 18]. This drop in testosterone is linked to the increased elimination and resistance of Leydig cells to hCG via factors that prevent LH secretion. It causes an absence of negative feedback on LH secretion. Gradually, secondary hypersecretion of FSH follows [2]. Thus, an increase in serum FSH and LH was observed in 60% of cases in our patients. Phé reports an identical observation in his study [19]. Renal failure leads to decreased clearance of LH and GnRH, thus explaining the increased plasma concentrations of prolactininemia. In 30% of cases, patients with ED had hyperprolactinemia. Other authors have also noted an increase in serum prolactin levels in patients with renal impairment in the order of 25 to 75% of cases [7, 8].

This increase is due to an autonomic hypersecretion of prolactin, since the kidney does not participate in the secretion of prolactin. [2]. Hyperuremia was found in 68.6% of cases in our study. Hyperuremia causes uremic neuropathy similar to diabetic neuropathy, leading to damage to the sympathetic and parasympathetic systems in the early stages of the disease [2]. The IIFE score of 5 was close to the results of Oueslati, who reported an average of 15.62 in a population of patients with CKF and Baka, which found 13.36 in a population consulting urology [10, 14]. ED in its severe form was the most common (45.2%). Oueslati's results are different from ours with a predominance of the mild form representing 33.3% of cases followed by the moderate form 23.3% and the severe form 20% [14]. For the psychological repercussions, the ED was difficult to support the patients (53.7%). The results of Baka in the general population were different with a high rate of patients who found erectile dysfunction completely unbearable at 31.50%, hardly bearable by 24.70%, unbearable 17.80%, almost bearable 16, 40%, and bearable 9.60% [10]. The psychological impact of ED is a subjective fact that can be influenced on the one hand by the partner and on the other hand by the difficulty in differentiating the psychological impact of CKD, which is a chronic stressful disease.

5. Treatment of Erectile Dysfunction

The administration of drugs to achieve an erection can be done either systemically or locally (intra-cavernous and intra-urethral injection of prostaglandin E1, vacuum). The use of surgery (straightening of the penis, excision of fibrosis of the cavernous bodies, penile prosthesis) in certain situations is sometimes necessary. IPDE5 are the first-line reference treatment for erectile dysfunction. They have been used in CRI patients and their satisfaction index according to the studies is between 80% and 85% [20-22]. In fact, during sexual stimulation, they facilitate muscle relaxation of the cavernous bodies and therefore blood flow to the erectile tissue at the origin of the erection. Yohimbine is historically the most prescribed substance for erectile dysfunction [23]. It improved the IIEF 5 score with a gain of 2 points. Its efficacy was low compared to that of type 5 phoshpodiesterase inhibitors. The finding in our study is similar to that made by Phé in the general population [17]. The management of erectile dysfunction in patients with renal failure should therefore not neglect the psychological side. Many of these patients suffer from depression or anxiety related to the chronic disease [2]. In our study, psychotherapy was the most used therapeutic method in 55% of cases. It improved the IIIFE5 score with a gain of 7.2 points.

6. Conclusion

ED has psychological consequences that accentuate the suffering of patients leading to an alteration in quality of life during CKF. Modification of these risk factors must be undertaken early in order to prevent the occurrence of this condition. IPDE5 have improved the management of erectile dysfunction.

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