

Ophthalmological Damage of Dialysis: about 157 Cases

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Abstract

The eye and the kidney seem intimately connected so many pathologies affect both these two organs. On the other hand, the kidney and the eye also have similarities concerning their embryological origin both having a dual origin, mesenchymal and ectodermal

Keywords: ophthalmological damage; chronic eye diseases; kidney

Introduction

The eye and the kidney seem intimately connected so many pathologies affect both these two organs. On the other hand, the kidney and the eye also have similarities concerning their embryological origin both having a dual origin, mesenchymal and ectodermal [8]. Thus, disturbances in embryogenesis between the 4th and 6th week of gestation, the period of organogenesis of the eyes and kidneys, can lead to abnormalities in both organs.

Many patients with end-stage renal disease on hemodialysis or peritoneal dialysis replacement suffer from chronic eye diseases, such as diabetic retinopathy and glaucoma.

This study evaluates the frequency of ocular abnormalities in dialysis patients.

Materials and Methods:

This cross-sectional study examined 314 eyes from 157 dialysis patients in all consenting chronic hemodialysis patients from two public hemodialysis centers in the Fez region. The study was designed in two parts. The medical history of each patient; were collected using a form return. All patients underwent a comprehensive ophthalmologic examination for assessment of visual acuity, intraocular pressure (IOP)

and anterior and posterior segments after dilation The statistical analysis was performed by IBM SPSS V25 software.

Results:

A total of 157 patients were enrolled in the study. The average age of patients is 51.19±14.77 years with a sex ratio of 0.89. Age in hemodialysis 3.52 years [1-16].98% of patients are dialysed by an arteriovenous fistula while 2% by a tunnelized catheter, the average number of sessions is 2.45 [2-3], average dry weight is 61.7 kg [36-120] . The average interdialytic weight gain is 2.26 [1-4]. Comorbidities are dominated by high blood pressure in 56% of patients, diabetes in 11.5%, heart disease in 5%, and system disease in 2% of patients. Note that vascular nephropathy represented the main initial nephropathy with 32% of cases. Visual impairment (AVL<5/10) was found in 61% of our patients. (Chart I) The adnexal lesions were polymorphic: Pterygoids were noted in 9.6% of patients, while dry eye and conjunctival hyperemia were each found in 7.6% of patients. Anterior segment disorders were dominated by cataracts (17.2%).for fundus examination, the latter objectified diabetic retinopathy in 9%, maculopathy in 8.3%, choroidal atrophy in 1.9%, and hypertensive retinopathy in 3.8% of patients.

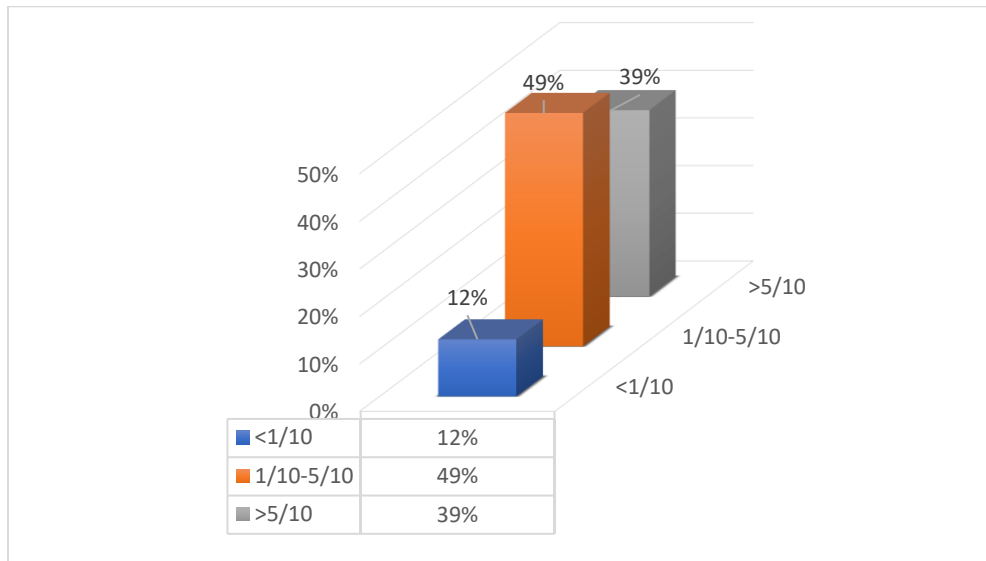


Figure I: Distribution of patients by visual acuity

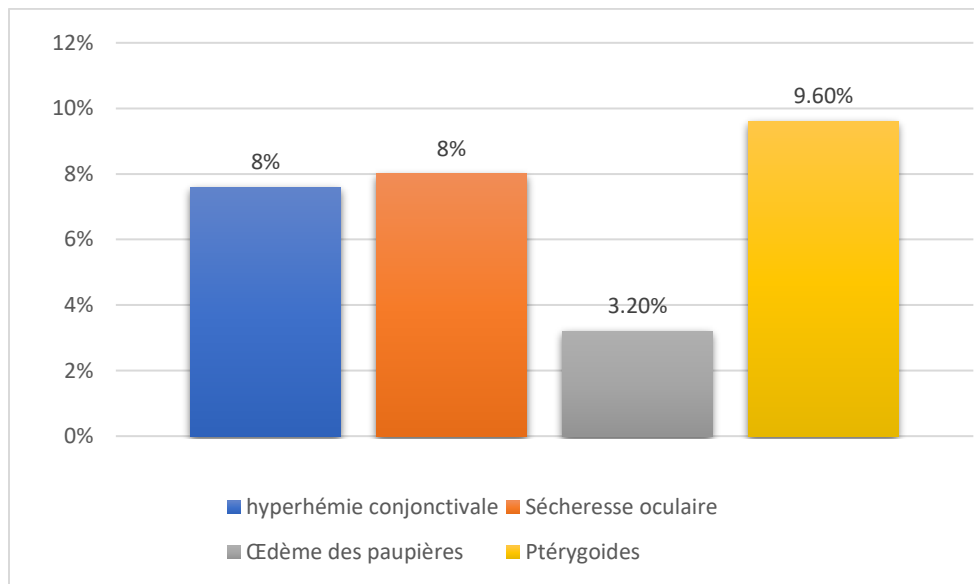
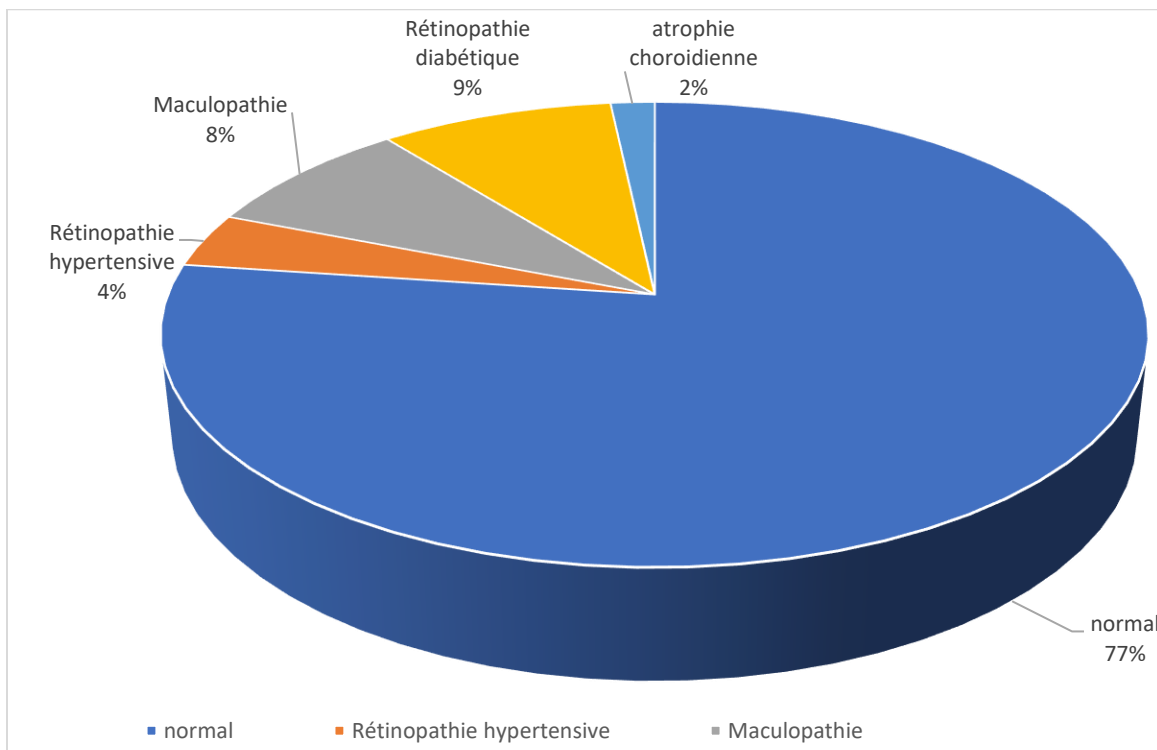


Figure II: distribution of patients according to adnexal involvement



Graph III: Distribution of patients according to posterior segment involvement.

Discussion:

Most of our patients are over 50 years old with an average age of 51.19±14.77 which is similar to the results found in most studies which may be related to the delay in diagnosis of patients who generally arrive at a very advanced stage of the disease, the improvement of the management of comorbidities and the extension of the life expectancy of patients.

The duration of dialysis in our series was 43 months with extremes of [1-192 months] which remains variable compared to other studies depending

on the criteria for recruiting shorter patients in the studies where selected patients were recently put on haemodialysis.

In our series, among the etiologies of chronic kidney disease, high blood pressure was the most common (56%) followed by diabetes in (11.5%).

vascular nephropathy was predominant with a percentage of 32% which remains the most frequent nephropathy in all series with variable percentages ranging from 36% in the Bariachaya et al series [1] to 59.3% in the Diallo series [3] followed by diabetic nephropathy in all series which could be explained by the frequency of hypertension and diabetes in our patients and also seen that it is the first causes inducing renal failure [6-7].

Series	Actual	Average age	Sex ratio	Initial nephropathy	Duration of dialysis
Barjachaya and all Nepal 2008 [1]	119	48,3 +/- 14,9	0,61	Diabetic nephropathy: 36% Vascular nephropathy: 42%	24months
Diallo [3] Mali 2008	32		0,56	Vascular nephropathy: 59.3% Diabetic nephropathy: 12.5%	42months
Karimi et all [4] Morocco 2008	50	47+/- 15	-	Vascular nephropathy: 51% Diabetic nephropathy – 30.3%	102 months
Amit H Pathak India 2020	94	55,36 +/- 12,58	0,72	Vascular nephropathy: 31.91% Diabetic nephropathy: 36.17%	-
OUR SERIES	157	51,19±14,77	0,89	Vascular nephropathy: 32%	43months

a- anterior segment abnormalities

- Conjunctival hyperemia and dry eye were the most common with a percentage of 8% each that may be related to

hyperuricemia and calcium deposits at the conjunctival level that are the cause of irritation of the anterior segment.

- Cataract in our series was present in 17.2% of patients which can be explained by the presence of comorbidities diabetes and hypertension in our patients and the advanced age of our population

b- Posterior segment abnormalities

Examination of the posterior segment revealed a significant frequency of ocular damage in chronic hemodialysis patients in our series, which can be explained by the frequency of diabetes and high blood pressure. The fundus objectified diabetic retinopathy in 9%, maculopathy in 8.3%, choroidal atrophy in 1.9%, and hypertensive retinopathy 3.8% of patients

which was less frequent compared to other series something that could be explained by good blood pressure control despite dialysis on average of two sessions per week. the Ivorian study KOMAN et al [2] hypertensive retinopathy was present in 45%.

The high frequency of diabetic retinopathy in advanced stages is explained by the long duration of kidney disease in our participants. Indeed, chronic kidney disease as proliferative diabetic retinopathy are recognized complications of diabetes. Appropriate management of retinopathy should be encouraged in order to avoid complications that may lead to blindness and impaired quality of life in the patient.

Series	Actual	Ptérygion	Hyper-hémie conjonctivale	Cataract	Diabetic retinopathy	Retinopathy Hypertensive
Barjachaya and all Nepal 2008 [1]	119	_	1,6%	5,9%	32%	47,1%
T.Hachache and All 1996 [2]	81	_	_	23,4%	44%	_
Karimi and all Morocco 2008 [4]	50	56,5	10,3%	22%	39,5%	
Koman et Al Ivory Coast [5]	100	_	_	33%	45%	
Amit H Pathak India 2020	94	_	_	_	28%	40%
OUR SERIES	157	9,6%	7,6%	17,2%	9%	3,8%

Conclusion:

Regular ophthalmological examinations are recommended because of the risk factors in haemodialysis patients as well as the prevalence of clinical ocular abnormalities in haemodialysis patients. The multitude of ocular damage in the context of chronic renal failure treated with hemodialysis justifies the need for regular monitoring of these patients in order to detect the various eye lesions before stage of ophthalmological complications that can increase the balance of comorbidities and further alter the quality of life of these patients. These patients should be monitored regularly to avoid deterioration of visual function.

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