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## Spontaneous tendon ruptures in chronic renal failure<sup>☆</sup>

### Roturas tendinosas espontáneas en la insuficiencia renal crónica

Dear Editor,

Spontaneous rupture of tendons (STR) is not frequent. The pathogenesis is unclear but there are a number risk factors involved: secondary hyperparathyroidism (HPTH), diabetes mellitus, obesity, rheumatoid arthritis, gout, statins, steroids, fluorquinolones and the presence of B and/or C hepatitis virus. In patients with chronic renal failure (CKD) the most frequent cause of tendon rupture is secondary hyperparathyroidism, which is present in most of these patients.<sup>1,2</sup>

There is no consensus about the treatment. Thus the objective of this study is to analyze the clinical features, risk factors, treatment and clinical evolution of STR in CKD patients.

The study includes end stage renal disease patients on renal replacement therapy that had STR during the years 1994 to 2013. Patients had a complete clinical history and they had a least one-year of follow up. Patient with tendon rupture caused by trauma or those with of the lost follow up were excluded.

There were six patients (0.23%) with STR. Mean age was  $46.6 \pm 11.8$  years, 4 were males (66.7%). Before the episode of STR all patients had been on hemodialysis for an average of  $9.1 \pm 4.2$  years. In 4 cases (66.7%) the STR affected the extremity of one body side and in 2 cases (33.3) they were bilateral.

In six patients there was a rupture of the femoral quadriceps tendon and in 2 cases the patellar tendon was affected. All patients had SHPT and one patient (16.6%) also receive statins to treat hypercholesterolemia (Table 1).

All patients underwent urgent (within 5 days) surgical intervention to repair the tendon fracture. In five cases the tendon was detached with respect to the patella and it was reinserted using nonabsorbable suture through transosseous tunnels in the patella. In 3 cases there was a rupture of the tendon and it had to be repaired by end-to-end suture with a

material that is not absorbable. Thereafter, the knee had to be immobilized for 8 weeks followed by a rehabilitation period of up to six months after surgery

With respect to the SHPT, all patients had bone pain and one patient (16.6%) complained of pruritus that was refractory to treatment. Mean serum concentration of PTH was  $968 \pm 308.2$  pg/ml, the CaxP was  $69.6 \pm 17.6$  and the mean value of alkaline phosphatase was  $518.3 \pm 334.4$  UI/l. All patients underwent total parathyroidectomy after a mean period of  $3.6 \pm 1.7$  months.

After  $12.5 \pm 5$  year of follow up there was no further evidence of STR or SHPT and 4 patients (66.7%) underwent renal transplantation (Table 2).

The feature of a CKD patient with STR is a relatively young patient on hemodialysis for more than 5 years that may be malnourished, with insufficient dose of dialysis, amyloidosis, chronic acidosis and also SHPT which is the most important pathogenic factor for STR.<sup>1-5</sup> The pathophysiology is not totally clear; it has been proposed that the increased subperiosteal resorption together with elastosis of the connective tissue due to chronic acidosis may debilitate the osteotendinous junction favoring the STR.<sup>6-8</sup>

STR affecting extensor knee required urgent or immediate surgery, it has to be done within the first few days after rupture, so fibrosis and retraction of tendon and muscle are avoided. Optimal results require immobilization and 4-6 months of rehabilitation.<sup>9</sup>

In addition to the treatment of STR, it is necessary to control risk factors to prevent new STR. Therefore SHPT should be treated, the use of calcimimetics have markedly reduced the need for parathyroidectomy. In patients with STR and persistent hyperparathyroidism, parathyroidectomy is recommended.<sup>10</sup>

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**Table 1 – Clinical features of spontaneous tendon rupture.**

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Age	34	57	57	53	30	49
Gender	F	M	F	F	M	M
Etiology CKD	Chronic pyelonephritis	Unknown etiology	Polycystic kidneys	Unknown etiology	Chronic pyelonephritis	Glomerulonephritis
Dialysis	HD	HD	HD	HD	HD	HD
Dialysis vintage (years)	16	6	4	10	6	10
Risk factors	SHPT	SHPT	SHPT	SHPT	SHPT	SHPT, statins
Type of rupture	Partial	Total	Total	Total	Total	Total
Body side	Unilateral	Unilateral	Unilateral	Unilateral	Bilateral	Bilateral
Tendons affected	Quadriceps	Quadriceps	Rotuliano	Quadriceps	Quadriceps	Quadriceps (L) and patellar (R)
PTH (pg/ml)	541	1000	1400	730	1187	950
Calcium (mg/dl)	11.6	12.4	10.4	12.1	10	10.2
Phosphate (mg/dl)	6.3	5.9	6.1	5.7	6.4	7.4
CaxP	73.08	73.16	63.44	68.97	64	75.48
Alkaline phosphatase (UI/l)	360	679	1000	115	713	243

R: right; M: male; HD: hemodialysis; SHPT: secondary hyperparathyroidism; L: left; CKD: chronic renal failure; F: female.

**Table 2 – Clinical follow up.**

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Follow up (year)	17	16	16	7	14	3
Renal transplant	No	Yes, same year of STR	Yes, one year after STR	Yes, two years after STR	Yes, two years after STR	No
Graft rejection	No	Chronic, after 7 years of transplantation. On hemodialysis until end of follow up	No	No	Chronic, after 12 years of transplantation. On hemodialysis until end of follow up	No
Death at the end of follow up?	No	No	No	Yes	No	Yes

In conclusion, STR in CKD patients usually affect the knee extensor tendons; it is more frequent in young males with more than nine years in hemodialysis and the main predisposing factor is SHPT. Quick surgical treatment, rehabilitation and treatment of SHPT allows patient's recovery and prevents long term re-occurrence.

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## Prevalence and risk of progression of chronic kidney disease in diabetics and hypertensive patients followed by primary care physicians<sup>☆</sup>

### Prevalencia y riesgo de progresión de enfermedad renal crónica en pacientes diabéticos e hipertensos seguidos en atención primaria en la Comunidad de Madrid

Dear Editor,

Chronic kidney disease (CKD) is an extremely important public health problem in part because it is not always diagnosed, the prevalence is high (10% of the adult population) with significant vascular morbidity and mortality<sup>1,2</sup>. The prevalence is increased in diabetic (men 29.3%/women 22.3%) and hypertensive patients (men 57%/women 61.4%) over the age of 60.<sup>3</sup>

The care of CKD patients is a burden for the Spanish public health system; the cost of care of patients with advanced CKD is approximately 800 million euros per year.<sup>2</sup> And the prevalence of CKD will increase due to the rise in life expectancies and a greater prevalence of obesity, hypertension (HTN) and diabetes mellitus.<sup>4</sup>

Diabetic patients with kidney failure present higher morbidity and mortality rates than those with normal kidney function. The estimated glomerular filtration rate (eGFR) has been used to stage CKD; in 2013, the "Kidney Disease: Improving Global Outcomes" guidelines were updated to include the degree of albuminuria to better define the stage of CKD. This allows stratified risk assessment of CKD progression and both cardiovascular and overall mortality.<sup>5</sup>

Studies on HTN<sup>6</sup> and diabetes mellitus<sup>7</sup> recommend motorisation of albuminuria and the eGFR.

The use of electronic medical records (EMR) in primary care (PC) centres in Madrid allows us to obtain valid information to conduct epidemiological studies.<sup>1</sup>

The objective of this work is to determine the prevalence and risk of CKD progression in diabetic and/or hypertensive patients over the age of 40 in Primary Care facilities.

Observational study using EMRs under conditions of regular clinical practice in 263 PC centres in the Community of Madrid, which provided health care to approximately 6,384,000 people (population database). The data was collected from October first 2012 to March 31st 2013.

Patients over the age of 40, who had been diagnosed with HTN and/or diabetes, were included (International Classification of Primary Care, ICPC codes: K86, K87, T90). Excluded patients were those in whom less than 3 or more than 15 months had elapsed between the two consecutive determinations of creatinine or albuminuria. These determinations were needed to match the CKD definition set out in the "Kidney Disease: Improving Global Outcomes"<sup>8</sup> guidelines.

Creatinine and albuminuria values (albumin/creatinine ratio) were obtained from the EMRs that incorporate all this information directly from all the laboratories in the Community of Madrid. The eGFR value was estimated using the CKD-EPI equation.<sup>2</sup>

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