Is Renal Osteodystrophy Rare in the Tropics?

T.J.		Youmbissi ^a
O.R.		Ndu ^a
J.F.		Gonsu ^b
J.L.		Ngu ^a
K.		Blackett-Ngu ^a
A.		Mbakop ^c

Units of ^aMedicine and Nephrology, ^bRadiology and ^cPathology, CUSS Medical School, University of Yaoundé, Cameroon

Dr. T.J. Youmbissi, MD (Hon), MSc (Newcastle), MRCP (UK), CUSS, University of Yaoundé, Yaoundé (Cameroon)

Dear Sir,

Since the introduction of chronic dialysis, renal osteodystrophy has been a major cause of concern in all parts of the world [1,2]. However, in African patients treated at our centre, our impression was that bone disease was not a major problem. We therefore studied bone biochemistry, radiology and histology in 50 patients with end stage renal failure (ESRF). Twenty of these (13 men, 7 women; mean age: 40 ± 13 years) were about to begin dialysis. 24 of them had been either on haemodialysis (HD) (10 men, 6 women; mean age 43 ± 12 years) or on continuous ambulatory peritoneal dialysis (CAPD) (5 men, 3 women; mean age: 39 ± 3 years) for at least 36 months; 6 patients (4 men, 2 women; mean age: 36 ± 10 years) had received a kidney transplant at least 36 months prior to the study. All patients were on oral calcium supplements.

Serum calcium, phosphates and alkaline phosphatase were measured by standard spectrophotometry techniques. Serum aluminium was assayed by flameless atomic absorption spectrophotometry. Serum iPTH was measured by radioimmunoassay using an antibody directed against the N-terminal of the PTH molecule (Ri-anen-PTH Kit – New England Nuclear).

Coefficients of variation were 12% intra-assay and 16% interassay. X-rays included films of the hands, skull and pelvis. Undecalcified sections of iliac crest bone biopsies were examined after staining with haematoxylin, anylin and xyli-dine. Tetracycline labelling was not undertaken.

Biochemical and radiological findings are summarized in tables 1 and 2. Serum calcium was low in most patients in ESRF patients not yet under treatment. Serum phosphate was high in almost all patients. Most of the other biological parameters including iPTH were normal. Soft tissue calcification was the commonest X-ray finding, and radiological osteomalacia was rare. There was no evidence of osteitis fibrosa on the films of our patients. Histologically, osteomalacia was found in 3 patients only (1 in the ESRF group not treated and 2 in the HD group). No patient presented histological evidence of osteitis fibrosa. Clinical manifestations of renal osteodystrophy were scarce and mild.

This low prevalence of renal osteodystrophy differs strikingly from the reports in temperate areas [1, 2]. The difference is immense notwithstanding the well recognized fact that renal

osteodystrophy varies according to centres, regions, countries [3, 4], and also according to type and duration of the initial renal pathology [5, 6]. Although all details are not available about the initial renal diseases of the above patients, it is well accepted

Table 1. Serum biochemistry in the four groups of patients

Patient group	
ESRF	
(n = 20)	
HD	
(n = 16)	
CAPD	
(n = 8)	
Transplants (n = 6)	
Serum calcium, mmol/l (reference range 2.17–2.59)	
2.05 ± 0.25	
2.23 ± 0.15	
2.21 ± 0.14	
2.5 ± 0.12	
Serum phosphate, mmol/l (reference range 0.77–1.36)	
2.11 ± 0.57	
1.65 ± 0.55	
1.97 ± 0.74	
1.02 ± 0.03	
Serum alkaline phosphatase, IU/l (reference range 30–280)	
225.5 ± 119.6	
177.9 ± 62.4	
148.12 ± 46.5	
125.7 ± 39.7	
Serum i PTH, ng/ml (reference range 4–8)	
5.2 ± 2.3	
6.4 ± 3.1	
6.2 ± 3.6	
4.2 ± 2.3	
8.6 ± 3.4	
12 ± 4.2	
10 ± 2.7	
28 ± 4.8	
Serum aluminium, µg/l (reference range 0–30)	
228	
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Table 2. Radiological findings in the four groups of patients

Patient group	ESRF	HD	CAPD	Transplants
(n = 20)	(n=16)	(n = 8)	(n = 6)	
Osteomalacia	2	2	11	
Osteitis fibrosa		0	0	0

Soft tissue

calcification 4 3 3 2

now that in the tropics glomerular diseases account for the vast majority of ESRF cases [7].

Other factors that may contribute to these differences include regional differences in sunlight exposure, dietary habits or perhaps the anecdotal ethnic variations in bone constitution.

These preliminary observations on a continent where such studies are rare or small, if confirmed on a larger scale may throw new light on the pathogenesis of renal osteodystrophy a very crippling complication of longstanding renal diseases.

Acknowledgement

We wish to thank Dr. R. Wilkinson, from the Freeman Hospital, University of Newcastle upon Tyne, for his assistance and expert advice, and Prof. A. Fournier, Amiens (France) for his advice.

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