

## Proteinuria in a young man

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A 25-year-old asymptomatic man was found to have proteinuria on routine urinalysis. Examination of the patient was unremarkable except for the presence of dysplastic nails. Plain X-ray of the abdomen is shown below (figure).



### Questions

- 1 What two abnormalities does the X-ray show?
- 2 What is your diagnosis?
- 3 What are the characteristic features of this condition?
- 4 How is it managed ?

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**Figure** Plain X-ray of the abdomen

## Answers

### QUESTION 1

The abdominal X-ray shows bilateral iliac horns. The 12th rib is hypoplastic on both sides.

### QUESTION 2

Nail–patella syndrome or hereditary onycho-osteodysplasia.

### QUESTION 3

The nail–patella syndrome is characterised by multiple osseous abnormalities, primarily affecting the elbows and knees, together with nail dysplasia. Nephropathy is seen in 30–40% of cases. Boxes 1 and 2 list the osseous and renal abnormalities in the nail–patella syndrome. Our patient had dysplastic nails with rudimentary patellae, iliac horns and hypoplastic 12th ribs. No elbow abnormalities were noted.

### QUESTION 4

No specific treatment is available for the renal or skeletal manifestations of nail–patella syndrome. The disease pursues a benign course in most patients with persistent asymptomatic proteinuria. Nephrotic syndrome and progressive renal failure occur in less than 10% of cases. Kidney transplantation has been successfully accomplished without recurrence of clinical or morphologic changes in the allograft.

## Discussion

The nail–patella syndrome, also known as hereditary onycho-osteodysplasia, is a rare genetic disease characterised by dysplasia of nails and patella, decreased mobility of the elbows, iliac horns, and, in some cases nephropathy. The prevalence is reported to be 4–22 cases per million population.<sup>1</sup>

### Skeletal abnormalities in nail–patella syndrome

- dysplastic/ hypoplastic nails of fingers and toes
- rudimentary or absent patellae
- osseous spurs from the iliac bones, sometimes palpable
- elbow joint deformity with limited extension
- rare: scoliosis; scapula thickening; subluxation of radial head, cleft lip/palate, hypoplastic ribs

#### Box 1

### Kidney involvement in nail–patella syndrome

- asymptomatic proteinuria
- microhaematuria
- nephrotic syndrome
- progressive renal failure
- other: impaired urinary concentrating ability, abnormal urinary acidification

#### Box 2

The nail–patella syndrome is inherited as an autosomal dominant trait linked to the ABO blood group and adenylate kinase loci at the distal end of the long arm of chromosome 9. Recent studies localise the nail–patella syndrome gene to an interval on 9q 34.1, distal to the centromeric marker D9S60 and proximal to the arginosuccinate synthetase gene, comprising a genetic distance of 9cM approximately.<sup>2</sup> Both sexes are equally affected. Clinically, nail dysplasia demonstrates nearly complete penetrance, whereas other skeletal features and nephropathy are variably expressed. The biochemical lesion responsible for the bone and renal abnormalities is unknown.

Renal biopsies on light microscopy reveal non-specific findings consisting of focal and segmental glomerulosclerosis, focal thickening of the capillary wall, and mesangial hypercellularity. Immunofluorescence is usually negative, but linear staining with IgM and C3 may be found along glomerular capillary walls. Electron microscopic changes are present even in patients with a normal renal biopsy by light microscopy. Basement membranes are irregularly thickened and have a number of electro-lucent areas giving a ‘moth eaten’ appearance. In the glomerular mesangium and in the basement membrane itself, fibrils with the periodicity of collagen are virtually pathognomonic for this condition.<sup>3–5</sup>

The diagnosis is clinical. The nail findings are usually the most striking. There is a triangular lunula and dysplasia of the nail bed with a heaped-up appearance. The thumbs and great toes are most severely involved and the nail changes lessen with each finger towards the little finger. The patellae are hypoplastic or absent. The most common renal manifestation of nail–patella syndrome is mild non-nephrotic proteinuria (seen in 30–40% cases) commonly associated with microhaematuria. Nephrotic syndrome and progressive renal failure occur in less than 10% cases. The proteinuria is non-selective and hypertension is mild.<sup>3,4</sup> Serum levels of complement are normal. The skeletal and renal features are given in boxes 1 and 2.

There is no specific treatment for the nail–patella syndrome. In most patients the disease pursues a benign course with persistent urinary abnormalities. Renal function should be carefully monitored so that end-stage renal replacement therapy can be introduced before the development of superimposed renal osteodystrophy. Patients are good candidates for renal transplantation since clinical or morphologic evidence of the disease is not known to recur in the allograft. Steroid use should be minimised since aseptic necrosis of the head of femur is a particular concern in these patients. Dysplastic nail changes have been known to improve after living–related kidney transplant from an unaffected sibling, which indicates that the donor kidney may be the source of a deficient enzyme or factor. Awareness of this rare but easily diagnosable condition is vital to prevent unnecessary investigations in a patient with asymptomatic urinary abnormalities.

**Learning points**

Nail-patella syndrome is a rare autosomal dominant disorder with characteristic skeletal and renal abnormalities, most commonly dysplastic nails, hypoplastic/absent patellae, and asymptomatic urinary abnormalities

**Box 3**

- 1 Bennett WM. Nail-patella syndrome. In: Jacobson HR, Striker GE, Klahr S, eds. *The principles and practice of nephrology*. St Louis: Mosby, 1995; pp 259-60.
- 2 Campeau E, Watkins D, Rouleau GA, et al. Linkage analysis of the nail-patella syndrome. *Am J Hum Genet* 1995; 56: 243-7.
- 3 Bennett WM, Musgrave JE, Campbell RA, et al. The nephropathy of the nail-patella syndrome: clinico-pathologic analysis of 11 kindred. *Am J Med* 1973; 54: 304-19.

**Final diagnosis**

Nail-patella syndrome or hereditary onycho-osteodysplasia.

**Keywords:** nail-patella syndrome

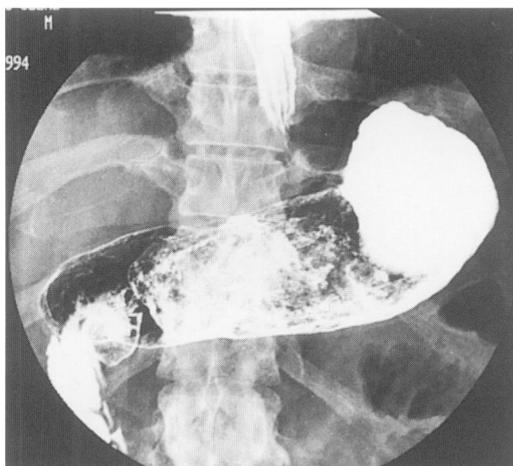
- 4 Sabnis SG, Antonovych TT, Argy WP, Rakowski TA, Gandy DR, Salcedo JR. Nail-patella syndrome. *Clin Nephrol* 1980; 14: 148-53.
- 5 Cohen AH, Adler SG. Nail-patella syndrome, lipodystrophy, Fabry disease and familial lecithin acyltransferase deficiency. In: Tisher CC, Brenner BM, eds. *Renal pathology*. Philadelphia: JP Lippincott, 1994; pp 1267-90.

## An unusual late complication of gastric surgery

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A 52-year-old man presented with a history of colicky epigastric pain, intermittent upper abdominal distention and diarrhoea worsening over a period of six months. Over 20 years previously a vagotomy and pyloroplasty had been performed for a chronic duodenal ulcer after which he complained of similar symptoms to the above. These were attributed to dumping syndrome, and settled with simple dietary advice at that time.

Initial investigation involved full blood count, urea and electrolytes (which were normal) and a barium meal examination (figure 1).



**Figure 1**

**Question**

What is the most probable diagnosis?

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