

Case 108

A patient with colic and its underlying endocrine cause

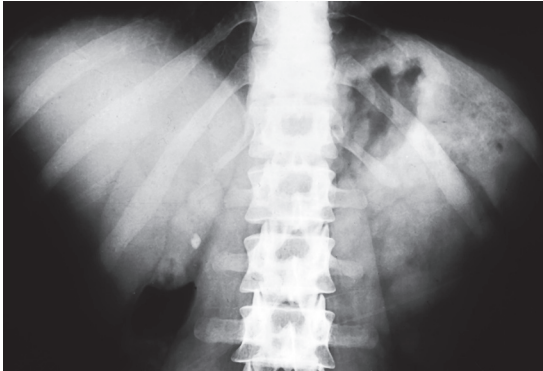


Figure 108.1

A married 33-year-old schoolteacher was admitted as an emergency on surgical take. She gave a history of being previously well before experiencing an attack of violent pain that had commenced 8 h before admission. The pain was situated in the right flank and spread around her side into her right iliac fossa and even down into her right groin. The pain was continuous, with sharp exacerbations, and made her double up and roll about in agony. She had had three children and said that the pain was rather like labour pain, except it was not intermittent and was 'much, much worse' – in fact, the worst pain she had ever experienced. She vomited several times – the food she had eaten and then just clear green fluid – and noticed that her urine had gone red in colour. She had had a normal period a week previously.

Her family doctor had come round to the house to see her, and had given her an injection of 100 mg of pethidine intramuscularly, which had helped ease the pain a good deal, and had arranged her urgent admission.

On examination, she was a healthy looking, slim young woman, but she was obviously in great pain. Her temperature was 37°C, pulse 86 beats/min and blood pressure 130/78 mmHg. She was lying on her right side,

doubled up and only

reluctantly turned onto her back to be examined. The abdomen was soft but there was some tenderness in the right loin. No masses could be felt. She passed a specimen of urine, which looked blood stained and, indeed, tested positive for blood.

Her haemoglobin and white cell count were normal, and a pregnancy test was negative. A plain X-ray of the abdomen was taken and is shown in Fig. 108.1.

What does this X-ray of the patient's abdomen show, and what is now your working diagnosis?

The X-ray (Fig. 108.1) demonstrates a small, densely calcified shadow just to the right and slightly above the tip of the transverse process of the second lumbar vertebra. Putting all the information together, the patient is experiencing a violent attack of right renal colic with associated haematuria. The X-ray strongly suggests a calcified urinary stone at the level of the right pelviureteric junction – a common site for a stone to impact.

Plain abdominal X-ray is no longer the investigation of choice for renal colic. What is the preferred test nowadays?

An abdominal CT scan, which will detect stones in the renal tract, identify their location and distinguish them from phleboliths.

She was admitted under the urology team. That night she had two more violent attacks of the same pain, for which she received intravenous pethidine, and next morning she passed a stone in her urine. This is shown in Fig. 108.2.

Can you identify this calculus?

This is a typical 'spiky' calcium oxalate stone – the commonest type of urinary calculus.

Part 2: Cases

The much relieved patient was discharged from hospital and subjected to a series of further investigations as an outpatient. The relevant results of these were as follows:

- Corrected serum calcium: 2.71 mmol/L (normal range 2.20–2.60 mmol/L).
- Parathyroid hormone level: 69 ng/L (normal range 9–54 ng/L).
- Repeated urine studies: sterile on culture, microscopy – occasional red blood cells and no white blood cells in



Figure 108.2 Urinary stone.

unspun samples.

What underlying cause of her stone are you thinking of now?

The raised serum calcium and raised serum parathyroid hormone level strongly indicate the presence of a functioning parathyroid adenoma. Excessive secretion of calcium in the urine has resulted in the formation of a calcium oxalate stone. Unless the tumour is located and removed, she will certainly have further problems from this.

Is there a special investigation that is very useful in confirming the diagnosis of a parathyroid tumour and of locating which of the parathyroid glands contains it?

Yes, a sestamibi scan. This was carried out in our patient and is shown in Fig 108.3. The sestamibi scan involves injecting technetium-99m-labelled sestamibi intravenously. It is taken up both by the thyroid gland and parathyroid adenoma; uptake in the thyroid washes out quickly, but persists in the parathyroid adenoma and is detected by placing the patient on a gamma camera. Sestamibi (also known as MIBI, or methoxyisobutylisonitrile) is the same radiopharmaceutical used in cardiac

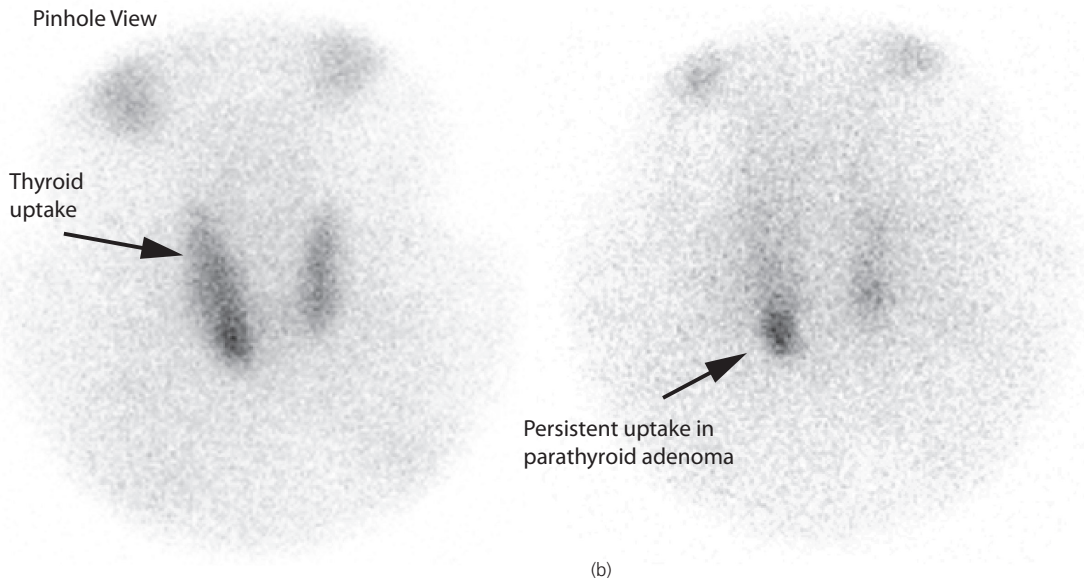


Figure 108.3 A sestamibi scan, (a) 15 min and (b) 135 min post-injection.

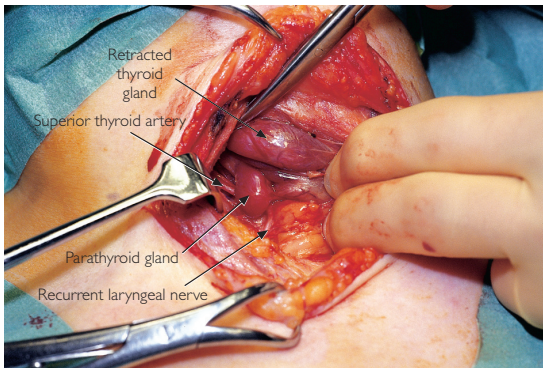


Figure 108.4 Operative findings.

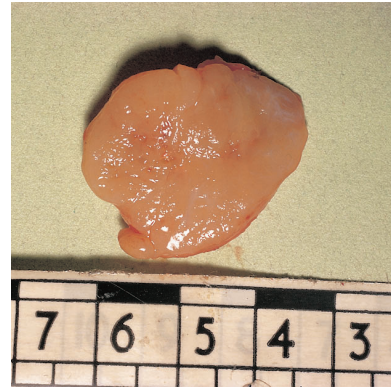


Figure 108.5 Parathyroid adenoma.

imaging. It comprises six MIBI molecules bound to the technetium-99m radioisotope.

The patient was readmitted to hospital and the neck explored. The parathyroid adenoma was found below the lower pole of the right lobe of the thyroid gland. The operative findings are shown in Fig 108.4 and the adenoma in Fig. 108.5.

What other endocrine tumours may occasionally coexist with a parathyroid adenoma, and what is this syndrome

called?

These are the multiple endocrine neoplasia (MEN) syndromes:

- MEN type 1 syndrome:
 - Parathyroid tumour.
 - Pancreatic tumour – islet cell, with the exception of the β cell (insulinoma).
 - Pituitary tumour, e.g. prolactinoma.
 - Adrenocortical tumour.
- MEN type 2 syndrome:
 - Parathyroid tumour (only in type 2A).
 - Medullary carcinoma of the thyroid.
 - Pheochromocytoma of adrenal medulla.
 - Neurofibromas of the tongue, lips and eyelids (only in type 2B).