

# **PORPHYRIA CUTANEA TARDA (PCT): AN UNUSUAL MANIFESTATION OF OBSTRUCTIVE LIVER DISEASE DUE TO CHOLELITHIASIS**

K B Lim  
T Tan  
B A Ali  
M M H Seah

**Middle Road Hospital**  
250 Middle Road  
Singapore 0718

K B Lim, MCRP (UK), Dip Ven (London)  
Registrar

T Tan, FRACP, AM  
Medical Director

B A Ali, MBBS  
Medical Officer

M M H Seah, MBBS  
Medical Officer

## **SYNOPSIS**

**An unusual case of porphyria cutanea tarda (PCT) in association with chronic obstructive liver disease due to cholelithiasis is reported. Other exogenous causes of PCT were excluded and the cutaneous lesions regressed completely following surgery suggesting that biliary tract obstruction due to choleliths had been responsible. Such an association has not been reported before.**

## **INTRODUCTION**

Porphyria Cutanea Tarda (PCT) is the most common type of porphyria seen in Europe and the United States. Five cases of PCT have also been diagnosed in Middle Road Hospital since 1981. Although familial cases have been reported, most cases of PCT have been sporadic. Nevertheless, a genetic predisposition is suspected, with the patients developing clinical manifestations of PCT when challenged by exogenous factors such as alcohol, oestrogen and iron overload. PCT has also been reported in association with hepatic tumours but not with obstructive liver disease from cholelithiasis. We report herein, the first case of PCT associated with chronic obstructive liver disease due to cholelithiasis.

**CASE REPORT** (Figures 1 and 2)

A 53 year old Chinese male presented to the Skin Clinic of Middle Road Hospital in March 1983 with a 8-year history of a recurrent, pruritic, blistering eruption affecting the upper trunk and arms.

Previously, he attended in January 1976, May and November 1980, when he was noted only to have unusually shaped erosions on the trunk and forearms. These were thought to be self induced, and a diagnosis of dermatitis artefacta was considered. However, biochemical investigations on the last visit showed a raised bilirubin of 2.1 mg/dl, alkaline phosphatase of 720 u/l and SGPT of 136 u/l, though these abnormal results were not noted because the patient defaulted follow-up.

On presentation in March 1983, hypo- and hyperpigmentation of the exposed and lightly-clothed areas, namely, the face, forearms, dorsal aspects of the hands and the upper trunk was noted. There were multiple irregular erosions and a few vesicles and bullae were seen on the back. Atrophic scars and milia from healed lesions were also present. Also noted, were mild hypertrichosis of the periorbital skin and sclerodermoid thickening of the skin over the dorsum of the hands. Systemic examination revealed deep jaundice, gynaecomastia with normal testes and a liver palpable 4 centimeters beneath the right costal margin. There was no history of drug ingestion and no family history of photosensitive dermatosis. He drank alcohol in small quantities, only occasionally and denied that the rash was sun aggravated.

Investigations showed a haemoglobin of 12.1 gm/dl, ESR of 111 mm/hr and normal leucocyte and differential counts. Liver function tests showed a raised bilirubin of 5.9 mg/dl, alkaline phosphatase of 1195 u/l and SGPT of 116 u/l. Hepatitis B surface antigen and alpha foeto-protein were negative. Serum iron was reduced at 55 ug/dl and TIBC was 260 ug/dl (normal). Antinuclear factor, Rose-Waller Test and serum pemphigus and pemphigoid antibodies were negative. Urinalysis showed excess bile and bile pigments. Screening tests for porphyrins were strongly positive in the urine and negative in stools and red blood cells. Chest X-ray showed no abnormality.

A skin biopsy from the back showed a large sub-epidermal bulla containing erythrocytes, a few lymphocytes and polymorphs, and slight festooning of the base. The basement membrane was normal and superficial dermal vessels showed a mantle of PAS-positive diastase-resistant deposits of hyaline material around them. These histological features were consistent with a diagnosis of PCT (Figure 3). Direct immunofluorescence of lesional skin was negative.

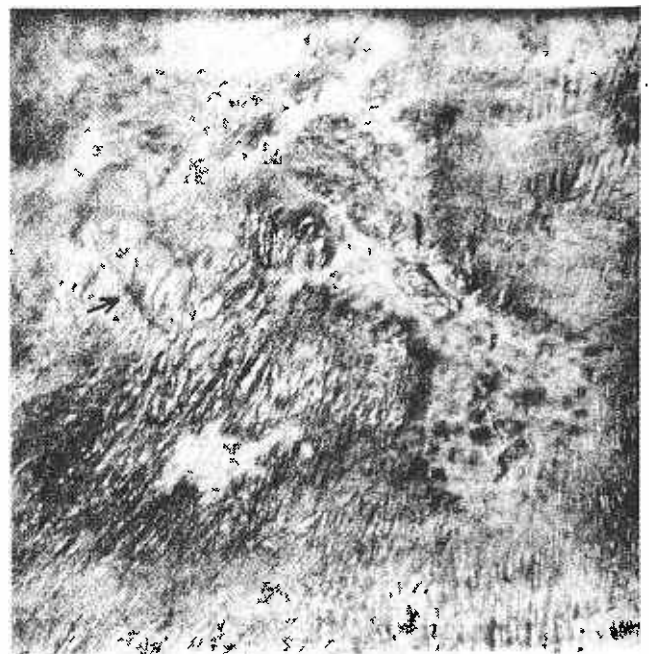
Liver scan showed moderate enlargement of the liver and spleen, especially the left lobe of the liver; a vague "cold" area in the upper central part of the liver suggesting a space occupying lesion; and increased splenic and bone marrow uptake suggesting some degree of liver parenchymal damage. The liver ultrasound showed multiple gallstones, gross dilation of the intrahepatic and common bile ducts and a normal pancreas.

Cholecystolithiasis and choledocholithiasis were present at operation and accordingly, a cholecystectomy and choledochoduodenostomy were performed in Singapore General Hospital. No other pathology was noted. Following surgery, his skin lesions gradually regressed. Being well, he subsequently defaulted follow-up and only attended in August 1984 after several recalls. Examination then, revealed only

healed hypopigmented scars but no fresh erosions or blisters (Figure 4). Liver function tests had reverted to normal and urine screening for porphyrins was also negative.



**Figure 1** Hypo- and hyperpigmentation of the upper chest  
(A) Irregularly shaped erosions  
(B) Some crusted erosions



**Figure 2** Irregular scar with adjacent bulla (arrowed) on the patient's back.

## DISCUSSION

Porphyria cutanea tarda (PCT) is the most common form of porphyria seen in most countries and is characterized by blisters, increased skin fragility, facial hypertrichosis, hyperpigmentation, milia, scars and sclerodermoid plaques on sun exposed skin. Two sub-groups of PCT are recognized. In one group, patients appear to have a genetic predisposition, defined by hepatic and sometimes erythrocyte deficiency of uroporphyrinogen decarboxylase (UD). This group includes hereditary PCT in which deficient UD levels have been detected in liver and red blood cells (1) and symptomatic or sporadic PCT in which decreased levels are found only in the liver (2). The second group comprises those cases of PCT associated with ingestion of hexachlorobenzene, an inhibitor of UD, and, in which a genetic deficiency has not been demonstrated.

Positive qualitative tests for porphyrins in the urine of our patient and a typical histology suggest the diagnosis of porphyria. Erythropoietic porphyrias can be excluded since screening tests for porphyrins in red blood cells were negative. PCT changes clinically and histologically, however, may also be seen in porphyria variegata and hereditary coproporphyria, but these are unlikely since there is no history of acute abdominal symptoms, another feature of these 2 disorders. Abnormal liver function tests in this patient further support a diagnosis of PCT, being impaired in about half of these cases. Ideally, the diagnosis should be confirmed beyond doubt by quantitative tests for porphyrins but this service is not available in Singapore. Liver histology may also show evidence of iron overload with increased stainable iron both in Kupffer cells and in hepatocytes in most cases of PCT. However, a planned liver biopsy was eventually cancelled at operation when uncontrollable bleeding in the post operative period seemed likely.

Laparotomy revealed that this patient had obstructive liver disease due to cholelithiasis and no tumour was found. The complete regression of his symptoms and signs following surgery, absence of porphyrins in the urine and completely normal liver function tests, suggest that PCT may have resulted from chronic obstructive liver disease, which in our patient, must have been present for at least 3 years. Measurement of UD activity can confirm a genetic defect but is only available in a few research centres. Nevertheless, we postulate that this patient was genetically predisposed, like most cases of PCT, and had developed the cutaneous manifestations when the obstruction had caused enough parenchymal damage to further compromise UD activity, thus, allowing PCT to manifest clinically.

PCT has been reported in association with hepatic tumours, most of which are malignant (3-5). It has not been reported in long standing obstructive liver disease due to cholelithiasis and this may be the first report of such an association.

## ACKNOWLEDGEMENT

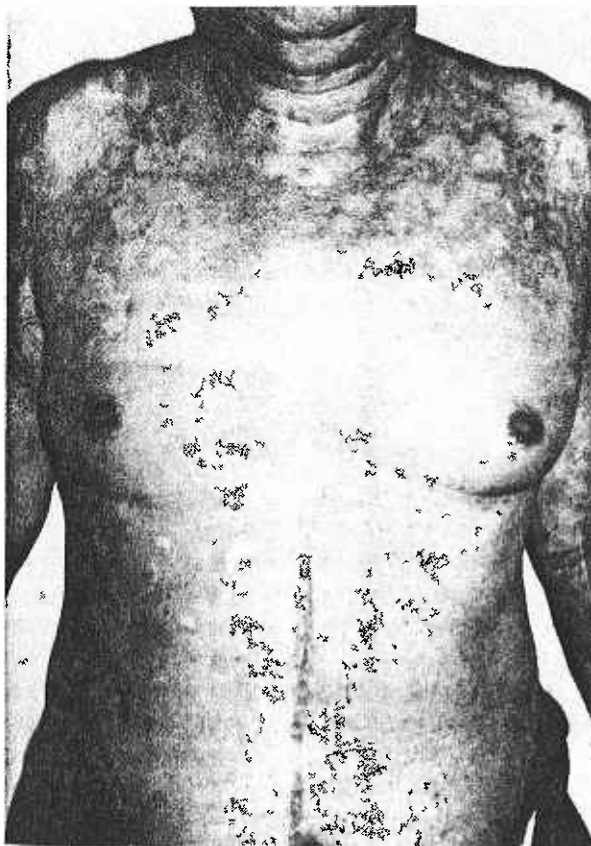
We would like to thank Mr Rajagopalan of Surgical Unit 'A' Singapore General Hospital for performing the curative surgery on this patient.

## REFERENCES

1. Kushner JP, Barbuto AJ, Lee GR: An inherited enzymatic defect in porphyria cutanea tarda. Decreased uroporphyrinogen decarboxylase activity. *J Clin Invest* 1976; 58:1089-97.



**Figure 3** PAS stained histological section of skin lesion showing a subepidermal bulla with festooning of the base and perivascular cuffing of the superficial dermal vessels by PAS — positive material (arrowed).



**Figure 4** Complete regression of lesions leaving only hypopigmentation 4 months after surgery.

2. Elder GH, Lee GB, Tovey JA: Decreased activity of hepatic uroporphyrinogen decarboxylase in sporadic porphyria cutanea tarda. *N Engl J Med* 1978; 299:274-8.
3. Tio TH, Leijnse B, Jarrett A, et al: Acquired porphyria from a liver tumour. *Clin Sci* 1957; 16:517.
4. Thomson RPH, Nicholson DC, Farnan T, et al: Cutaneous porphyria due to malignant primary hepatoma. *Gastroenterology* 1970; 59:779.
5. Keczes K, Barker DJ: Malignant Hepatoma associated with acquired hepatic cutaneous porphyria. *Arch Dermatol* 1976; 112:78-82.