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CASE REPORT

Megacalycosis Revisited

PHC Lau, AF McKenzie

Diagnostic Imaging Department, Peter MacCallum Cancer Institute, Victoria, Australia

ABSTRACT

A case of megacalycosis is reported as an incidental finding in a Chinese woman with bilateral breast cancer. Megacalycosis is an uncommon condition. The radiological features and a literature review of this condition are presented.

Key Words: *Congenital abnormalities, Radiology, Renal calices*

INTRODUCTION

Megacalycosis is a congenital abnormality of the renal collecting system, characterised by dilatation of the renal calyces, without evidence of distension of the renal pelvis or ureter.[1] The condition was first described by Puigvert in 1963, and subsequently reported in the English literature by Gittes and Talner in 1972.[2] The condition is thought to be sporadic, but familial megacalycosis has been described.[3] Megacalycosis has been primarily reported in Caucasians, with a strong male predominance (ratio 6:1). However, the condition has also been reported in one African American woman[4] and in Egyptian children.[3] We report a case of megacalycosis as an incidental finding in an adult Chinese woman presenting with bilateral breast cancer.

CASE REPORT

A 68-year-old Chinese woman, a recent migrant, was admitted for bilateral needle localisation and left axillary clearance following detection of breast lumps. She developed a urinary tract infection preoperatively and was treated with intravenous antibiotics. The breast surgery was uneventful and she was discharged on oral antibiotics for her urinary tract infection.

Investigations showed normal serum urea (6 mmol/L) and creatinine (80 mmol/L) levels. Initial radiological examination by plain abdominal film demonstrated multiple small calcifications in the lower pole of both kidneys. In order to exclude renal tract obstruction, intravenous pyelography was performed (Figure 1). There was no obstruction, but gross dilatation of the renal calyces without blunting was evident. The renal pelves were normal in size. Renal calculi were seen in the lower pole calyces on both sides. Absence of infundibular strictures and enlarged renal size were noted. These features were not consistent with tuberculous infection. CT was performed for further assessment and showed gross dilatation of all renal calyces with parenchymal thinning and normal renal pelves (Figure 2a). Renal calculi were noted in both lower pole calyces (Figure 2b). A final diagnosis of congenital megacalycosis was made.

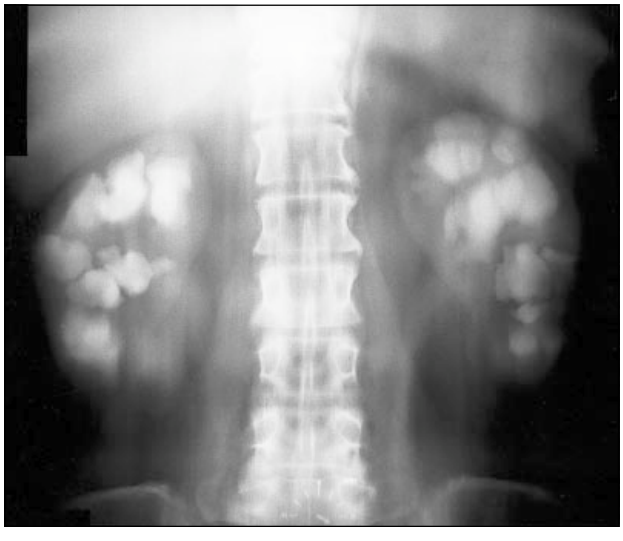

Figure 1. Coronal tomogram of a 68-year-old woman obtained during intravenous pyelography. Dilatation of the renal calyces, faceting, and an increase in the number of calyces can be seen, while the renal pelves are not dilated.

Correspondence: *Dr. PHC Lau, Radiology Department, Western Hospital, Footscray, Victoria 3011, Australia.*
Tel: (03) 8 345 6234; Fax: (03) 9 882 9738;
E-mail: Plau@netspace.net.au

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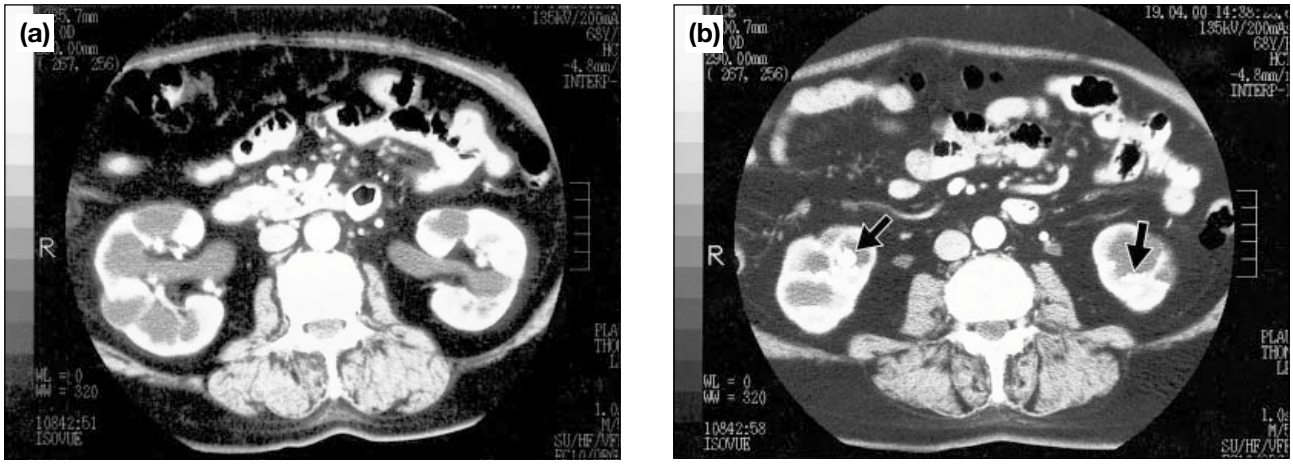

Figure 2. Intravenous contrast-enhanced abdominal CT at the level of the renal hilum demonstrates (a) dilatation of the calyces, parenchymal thinning, and normal renal pelves and (b) calculi (arrows) in the lower pole calyces.

DISCUSSION

Congenital megacalycosis is an uncommon, non-progressive condition of unknown aetiology, characterised by non-obstructive dilatation of calyces due to underdevelopment or hypoplasia of the renal pyramids.[1-4] It usually affects one kidney. This case report is unusual in that the megacalycosis is a bilateral finding. The incidence of bilateral megacalycosis is unknown.

Megacalycosis does not occur secondary to reflux, papillary necrosis, or chronic infection.[3] While the condition usually remains asymptomatic, symptoms related to calculus formation (due to stasis of urine in dilated calyces) and urinary tract infection such as pain, haematuria, or fever may be seen, as in this case.

Radiological findings include a normal-sized kidney or nephromegaly.[2,3] Malformed, dilated polygonal calyces are noted which appear faceted (not blunted or rounded).[1,3] The renal pelvis, pelvi-ureteric junction, and ureter appear normal. Normal renal parenchyma or thinned but not scarred parenchyma (as in this case) are seen.[2] There is a smooth renal contour with a uniformly hypoplastic medulla. Renal angiography demonstrates a normal arterial system, while radionuclide renal imaging shows normal excretion and wash out with diuretic, with normal rate of urine formation but a delay in demonstration of the collecting system due to the large number of calyces.[3] Vesico-ureteric reflux is absent or minimal if present.[2,3] Associations include megaureter,[3] Hirschsprung's disease,[3] nephrolithiasis, and vascular polyps.[5]

The main differential diagnosis is hydronephrosis, which causes distension of the renal pelvis and calyces secondary to obstruction in the renal collecting system. The presence of more than 18 calyces is the most important radiological feature for differentiating megacalycosis from hydronephrosis.[6] Other differential diagnoses include chronic pyelonephritis, which is usually associated with focal parenchymal scarring.[2] Histopathologic examination in megacalycosis reveals a rather sparse medulla in contrast to hydronephrotic kidney, in which there is degeneration of medulla due to elevation of intrarenal pressure.[1]

CONCLUSION

Congenital megacalycosis is an uncommon congenital abnormality of the renal collecting system that usually affects one kidney. The diagnosis is suggested by radiological findings of multiple dilated, faceted calyces in the absence of pelvic dilatation, normal or thinned renal parenchyma, and the presence of a smooth renal contour in a normal or slightly enlarged kidney. Obstruction is absent and renal function is usually normal.

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