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Asymptomatic Adult Wilms' Tumor (Nephroblastoma) Incidemtally Detected by CTCTにより偶然発見された無症状の成人ウイルムス腫瘍(腎芽細胞腫)

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CASE REPORT

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Asymptomatic Adult Wilms' Tumor (Nephroblastoma) Incidentally Detected by CT

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Wilms' tumor (nephroblastoma), the most common renal neoplasm in children, is rarely found in adults. A 73-year-old woman with asymptomatic adult Wilms' tumor, incidentally detected by CT, is reported. CT and MRI showed a small mass with homogeneous enhancement after the administration of contrast medium. Ultrasonography demonstrated a well-defined echogenic mass with a halo-like, peripheral hypoechoic area. Selective angiography showed no tumor vessels. Although renal cell carcinoma should be considered in the differential diagnosis, it is still difficult to distinguish from small Wilms' tumor like this case.

Key words: Wilms' tumor, nephroblastoma, CT, ultrasound, incidental, adult

Introduction

Wilms' tumor (nephroblastoma), the most common renal neoplasm in children, is rarely found in adults. Kumar *et al.*[1] found the incidence of this tumor to be 0.5% of all adult renal neoplasms. Kilton *et al.*[2] reported the following criteria for the diagnosis of adult Wilms' tumor: 1) primary renal plasm, 2) primitive blastematous spindle or round cell components, 3) formation of abortive or embryonal tubular or glomeruloid structures, 4) absence of tumor areas indicative of hypernephroma, 5) pictorial confirmation of histology, and 6) age over 15 years. We report the radiologic findings of one case of adult Wilms' tumor detected incidentally by CT. The tumor was small in size and satisfied the diagnostic criteria.

Case Report

The patient was a 73-year-old Japanese woman, previously treated for hypertension. Abnormal right kidney findings were indicated by screening abdominal CT. There was no contributory disease in the family or past history. Physical examination showed no abnormalities. Precontrast CT scans showed a 2.5 × 3.2 cm isodensity mass (Fig. 1-A), with faint enhancement after intravenous administration of iodinated contrast medium (Fig. 1-B). Ultrasonogram disclosed a small, well-defined echogenic mass with a halo-like, peripheral hypoechoic area (Fig. 2). US angiogram showed moderate staining in the corresponding echogenic area (Fig. 3). Precontrast spin-echo MR images indicated an iso-signal intensity mass compared with the surrounding normal parenchyma on T_1-weighed images (Fig. 4-A) and a high signal intensity mass with ring-like, peripheral low signal intensity area on T_2-weighted images (Fig. 4-B). Postcontrast T_1-weighted images demonstrated moderate enhancement in the corresponding high signal intensity area on T_2-weighted images (Fig. 4-C). Selective angiography displayed no tumor vessels on arterial phase (Fig. 5-A) and no abnormal stain in the corresponding tumor on parenchymal phase (Fig. 5-B). The patient underwent total right nephrectomy. Gross pathologic examination showed a soft, yellowish-brown, 2.0 × 3.0 cm mass with well-defined boundaries. Histologic examination indicated a rich cellular component surrounded by a fibrotic tissue area (Fig. 6-A). The cellular component was composed of tubules with intraluminal tufts (embryonic glomeruli or proglomeruli) and undifferentiated spheroidal and fusiform cells (Fig. 6-B).

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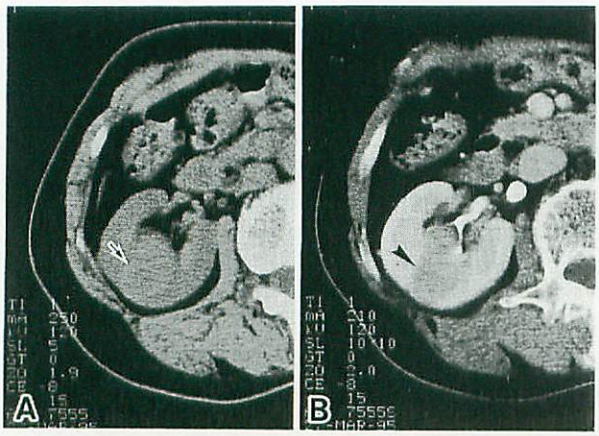

Fig. 1. A and B: CT scans before (A) and after (B) the injection of contrast material, showing an essentially iso-density mass (*arrow*) (CT attenuation number: 30 Hu) with homogeneous enhancement (*arrowhead*) (CT attenuation number: 50 Hu).

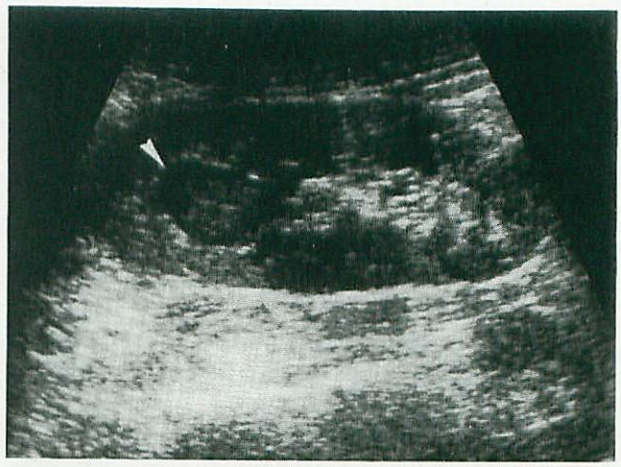

Fig. 2. Longitudinal ultrasonogram of the right kidney showing a well-defined echogenic mass with a halo-like, peripheral, hypoechoic area (*arrowhead*).

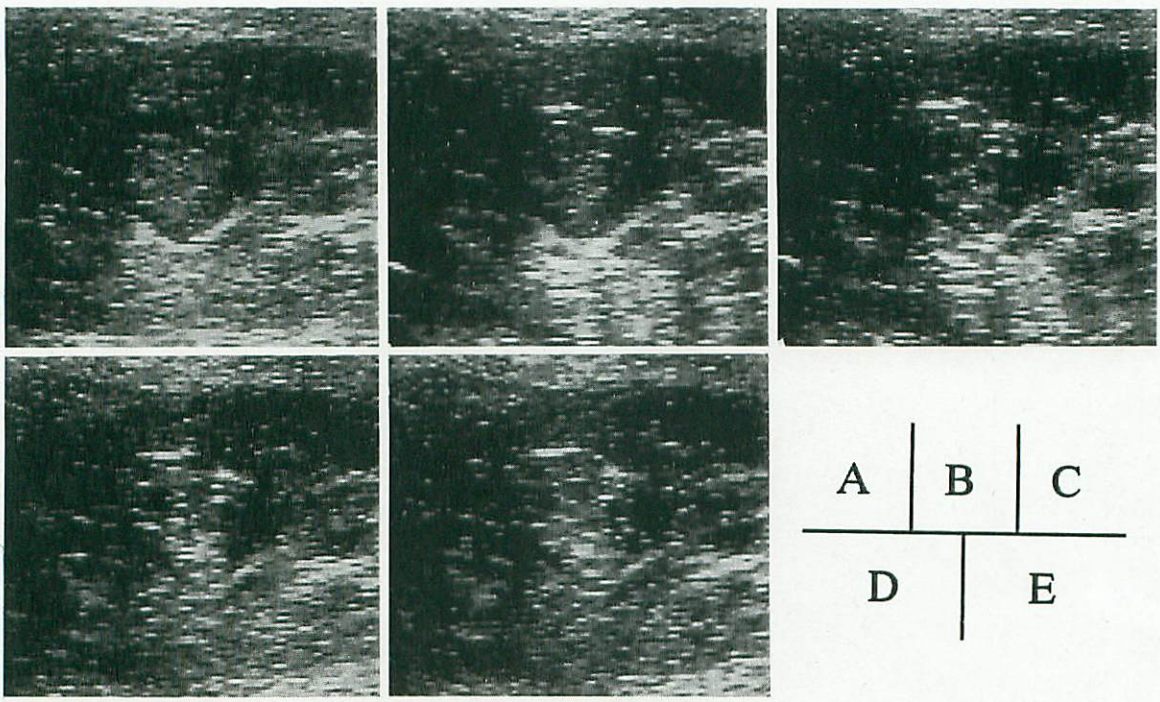

Fig. 3. A to E: Serial ultrasonograms of the renal mass obtained before (A) and after (B–E) injection of contrast medium. Moderate enhancement of the mass is evident, except in the peripheral hypoechoic area.

Discussion

Wilms' tumor accounts for 87% of renal neoplasms in children,[3] but only about 0.5% in adults.[1] However, as Kilton *et al.*[2] reported, the diagnosis of Wilms' tumor is difficult due to the many different histopathologic findings. The actual number of cases may possibly be less than that reported so far. The highest reported age for this tumor was 84 years. The average age in adult cases is 30 years,[5] and thus the 73-year-old patient in this study was considered a rare case. In view of the patient's age, renal cell carcinoma was the initial differential diagnosis. Diagnostic imaging is quite useful for differentiation. For Wilms' tumor, CT often shows a large mass with clear borders, and internal structures have heterogeneous low density areas with no contrast enhancement. The solid component may be enhanced to various degrees. In angiography, more than 80% of these tumors are hypovascular,[5] and intratumoral vessels characteristically show fine wavy or zig-zag patterns. US often shows a large cystic mass along with the solid component. However, most of these findings are

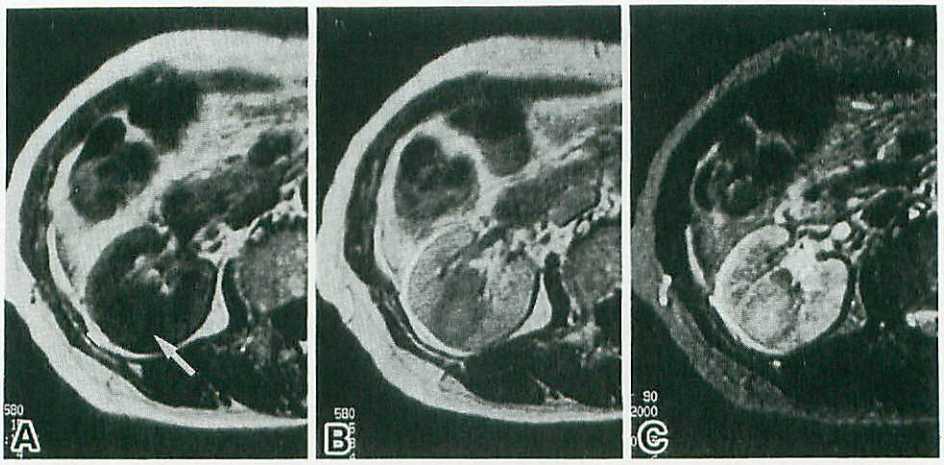

Fig. 4. A and B: MR Images (T_1-weighted) before (A) and after (B) injection of contrast material showing an iso-signal intensity mass (*arrows*) compared with the surrounding normal parenchyma. The mass is comprised of a moderately enhanced central and poorly enhanced peripheral area. C: T_2-weighted image showing a high signal intensity mass with peripheral low signal intensity area.

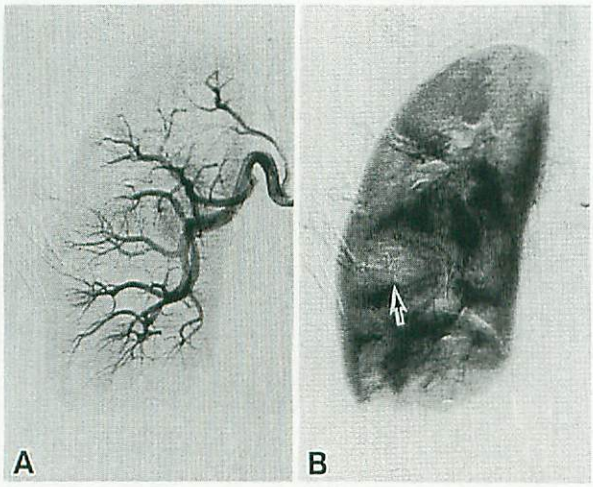

Fig. 5. A and B: Selective right renal arteriogram. There are no significant findings on arterial phase (A), and no abnormal stain is displayed in the corresponding tumor on parenchymal phase (*arrow*) (B).

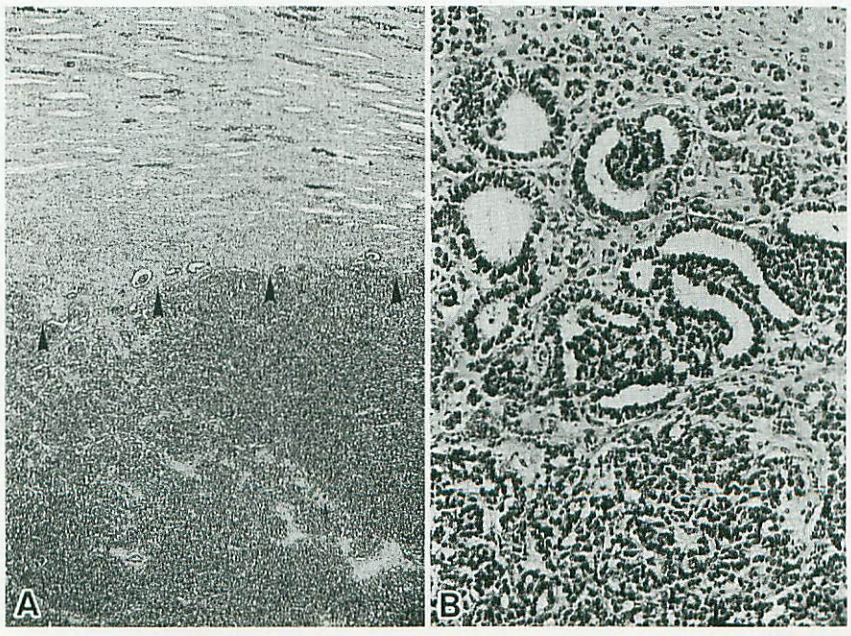

Fig. 6 A: Photomicrograph showing presence of fibrous tissue (*arrow*) and a rich cellular component (original magnification × 40). B: Photomicrograph shows tubule formation, tubules with intraluminal tufts (embryonic glomeruli or proglomeruli), and undifferentiated cells (original magnification × 400).

for cases with large masses,[5] and to the best of our knowledge, there have been no reports of image findings for a small mass such as that noted in the present study. Although CT and MRI showed medium homogeneous enhancement of the tumor, angiography failed to disclose any clear abnormal vascular outgrowth or staining, and the tumor was judged avascular. However, these findings are considered compatible with those for small renal cell carcinoma.[6–8] Although US and MRI showed the target pattern due to thick fibrous capsules, those capsules are sometimes present in small renal cell carcinoma[7] and therefore cannot always be a point of differentiation. Thus, even with the present well-developed standard of diagnostic imaging, it is still difficult to distinguish renal carcinoma from Wilms' tumor, especially when small in size. This matter warrants further study.

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