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SOLITARY BRAIN METASTASIS FROM RENAL CELL CARCINOMA 14 YEARS AFTER NEPHRECTOMY: A CASE REPORT

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We report a case of solitary brain metastasis from renal cell carcinoma (RCC) 14 years after nephrectomy. A 46-year-old female had sudden onset of headaches, aphasia, gait disturbance and right hemiparesis. A brain CT revealed a cystic tumor in the left parietal area, which was surgically removed completely. Microscopic appearances of the brain tumor were similar to those of the primary RCC. Positive immunoreaction for epithelial membrane antigen (EMA) and keratin confirmed the diagnosis of metastatic RCC. This is the second case of solitary brain metastasis from RCC occurring more than 10 years after nephrectomy.

Key words: Brain metastasis, Late recurrence, Renal cell carcinoma

INTRODUCTION

Late recurrence after removal of the primary tumor occurs as a characteristic of renal cell carcinoma (RCC). McNicohls et al.[1] reported that 18 of 158 (11%) patients with RCC showed late recurrence (more than 10 years after nephrectomy). Late recurrence of RCC involves various organs including renal fossa, lung, bone, pancreas[1-3].

We report a case of solitary brain metastasis from RCC 14 years after nephrectomy.

CASE REPORT

A 46-year-old Japanese female presented with sudden onset of headaches, confusion, aphasia, gait disturbance, and right hemiparesis in September, 1987. A brain computerized tomographic (CT) scan revealed a contrast-media-enhanced cystic lesion in the left parietal area (Fig. 1). An emergent operation through craniotomy showed a multilobular cystic tumor containing bloody fluid. Complete surgical removal of the tumor resulted in disappearance of all neurological symptoms. She had undergone left nephrectomy for RCC 14 years previously. No apparent metastatic lesion was observed at that time.

Pethological examination of the brain tumor revealed granular tumor cells with moderate nuclear atypism, similar to those in the primary RCC (Fig. 2A & B). The cystic pattern observed in the brain tumor may be due to secondary change following intratumoral hemorrhage. The immunoperoxidase studies were performed on deparafinized sections of formalin-fixed tumor tissue by a conventional avidin biotin-complex (ABC) technique, using antibodies raised against epithelial membrane antigen (EMA) and keratin (Dako, Sweden). The brain tumor gave a positive immunoreaction for EMA and keratin confirming metastatic RCC.

Postoperative chest X-ray film with tomography, abdominal CT scan, and radioisotope bone scan revealed no evidence of other metastatic diseases. The patient is well without any sign of recurrence 28 months postoperatively.

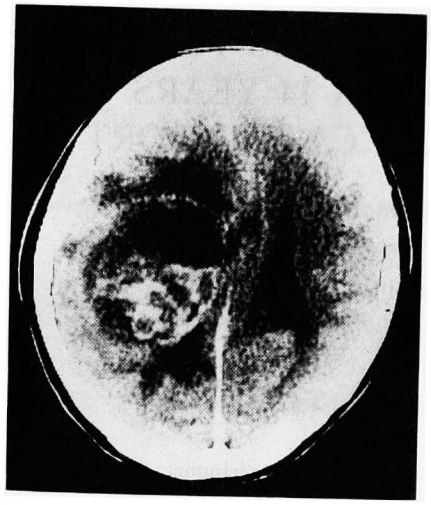

Fig. 1. An enhanced CT scan of the brain revealed a multilobular cystic tumor in the left parietal area.

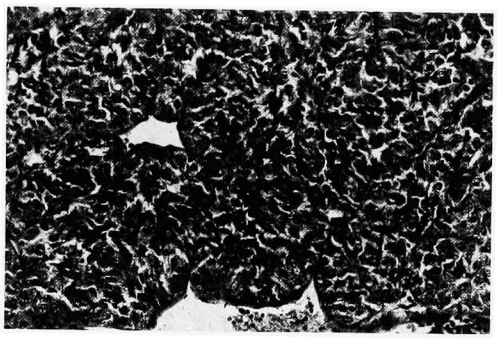

Fig. 2A. Primary kidney tumor shows renal cell carcinoma, granular cell type (H&E, ×66).

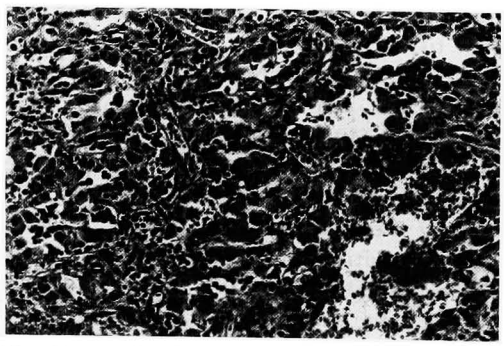

Fig. 2B. Brain tumor shows granular tumor cells, similar to those in the primary RCC (H&E, ×66).

DISCUSSION

RCC is a highly metastatic tumor ; about 30% of the patients with RCC have evidence of distant metastasis at the time of the first examination[4]. Saitoh[5] examined the mode of distant metastasis of RCC in 1,451 autopsy cases, and found 1,373 cases (89%) which had one or more distant metastases; lungs, lymph nodes, bone and liver were the common sites of the metastasis; less commonly involved organs were adrenal gland, pancreas, and contralateral kidney; brain metastasis was observed in 11% of the autopsy cases with RCC.

Gay et al.[6] reported that 39 of 926 (3.9 %) of patients with RCC had clinically manifested brain metastasis; all patients, except 2 with incomplete record, had evidence of widespread disease; the median time interval between the initial diagnosis and the discovery of brain metastasis was 65.5 weeks ranging from 0 to 462 weeks.

Hemangioblastoma of the central nervous system is sometimes indistinguishable from brain metastasis from RCC. Immunohistochemical staining of the tumor using antibodies against epithelial membrane antigen is useful in the differential diagnosis ; EMA is positive in metastatic RCC as observed in our case but negative in hemangioblastoma[7]. Late recurrence of RCC involving the brain is extremely rare. We are aware of only one other case of solitary metastasis from RCC more than 10 years after nephrectomy[4]. The mechanism of late recurrence of RCC is not known. Nakano et al.[2] speculated that the loss of the patient's hormonal balance or immune suppression against tumor cells may be a causative factor. In summary, we report a case of solitary brain metastasis from RCC 14 years after nephrectomy, which was successfully treated by surgical excision. Long term follow up is inevitable for patients with RCC treated by curative nephrectomy.

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和文抄録

腎摘後14年目に孤立性脳転移をきたした腎細胞癌の1例

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46歳の女性にみられた腎摘後14年目に孤立性脳転移をきたした腎細胞癌の1例を報告する．

患者は突然，頭痛，失語，歩行障害，右片麻痺をきした．脳 CT では左側頭部に嚢胞性腫瘍を認め，これは外科的に完全に切除された．

脳腫瘍の顕微鏡的所見は，腎細胞癌の原発巣と類似していた．脳腫瘍は免疫組織学的に EMA とケラチン陽性で，転移性腎細胞癌の診断が確認された．

本症例は腎摘後10年以上へて孤立性脳転移をきたした第2例目の症例である．

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