We report two patients diagnosed with advanced renal cell carcinoma with multiple metastases, who were successfully treated with the allergen-removed *Rhus verniciflua* Stokes (aRVS) extract.

**Rhus verniciflua** Stokes extract as a potential option for treatment of metastatic renal cell carcinoma: report of two cases

We report two patients diagnosed with advanced renal cell carcinoma with multiple metastases, who were successfully treated with the allergen-removed *Rhus verniciflua* Stokes (aRVS) extract.

**case 1**

A 50-year-old man presented with hematuria in July 2006. Abdominal computed tomography (CT) scan revealed a 12-cm right renal mass, and a right radical nephrectomy was carried out. Pathologic study revealed the clear cell type of renal cell carcinoma (RCC; Fuhrman grade II). Four months after nephrectomy, a chest CT revealed multiple pulmonary nodules (Figure 1A). With a clinical diagnosis of unresectable metastatic RCC, immunotherapy was recommended, but he refused. Instead, treatment with aRVS extract 450-mg capsules orally three times a day was initiated in December 2006 after his informed consent. After 4 months of treatment, CT scan showed a complete response in all pulmonary metastases including resolution of right pulmonary artery thrombosis (Figure 1B). Follow-up CT scans continued to demonstrate a complete response, which has lasted over 31 months since the initiation of aRVS therapy.

**case 2**

A 47-year-old man with multiple pulmonary nodules had a left radical nephrectomy for a 6.3-cm mass conducted on him, the clear cell type of RCC (Fuhrman grade III), in September 2006. Follow-up CT scans showed aggravation of the metastases in both lungs, and a newly developed left hilar lymph node enlargement and a right adrenal mass, and he started palliative sunitinib 50 mg/day from March 2007. After 2 months, metastases in the lungs and right adrenal grand were larger, and a new left adrenal mass was found (Figure 1C). The sunitinib was stopped, and he refused further conventional therapy. In June 2007, an exploratory laparotomy was conducted for jejunal intussusceptions, and the histologic examination revealed multiple intraluminal polyloid metastatic RCC lesions. Treatment with aRVS extract 450-mg capsules orally three times a day was initiated in July 2007 after his informed consent. After 9 months of aRVS therapy, a chest CT scan showed the resolution of the masses, noted previously in the left upper lung (Figure 1D). After 13 months of aRVS therapy, a CT scan showed significant reduction in the size of the metastatic masses in both adrenal glands. No evidence of disease was found in CT scans obtained 29 months after the initiation of aRVS therapy.

*Rhus verniciflua* Stokes (RVS) has been used in Traditional Korean Medicine as a herbal therapy for the treatment of abdominal masses since the 15th century AD [1]. *In vitro* studies of RVS extract have demonstrated anticancer effects against Lewis lung carcinoma (LLC) [2], as well as inhibition of proliferation and induced apoptosis in osteosarcoma cell lines [3], and cell growth inhibition of B-cell and T-cell lymphoma cell lines [4]. Another study reported that flavonoids of RVS selectively inhibited growth and induced apoptosis of a transformed hepatic cell line [5]. One such flavonoid butein has also been shown to suppress the clonogenic growth of a breast cancer cell line [6]. The medical use of RVS has been limited because of its toxic allergen, urushiol, which causes dermatitis. However, we have developed aRVS extract, which has been depleted of urushiol. *In vivo* studies of aRVS have reported that aRVS suppressed tumor growth in mice injected subcutaneously with A549 cells and LLC, and in animal models utilizing transplantable breast carcinoma.
CA 755 and cancer of uterine cervix RShM-5 [2, 7]. The aRVS also inhibited the proliferation and migration activity of human umbilical vein endothelial cells [2]. In clinical observational studies of aRVS, the overall survival in metastatic colorectal cancer was 10.9 months [8], and reduction of pleural effusion was observed in a patient with non-small-cell lung cancer [9].

These cases, of RCC patients with clinically or pathologically diagnosed multiple metastases, demonstrate complete responses to the monotherapy of aRVS. Furthermore, the responses have lasted over 31 months and 29 months after the initiation of aRVS therapy. These cases indicate that aRVS is a promising alternative for the management of unrectable RCC with multiple metastases. However, further biological research on aRVS and prospective clinical trials are required to confirm the safety and the efficacy of aRVS.

S. K. Lee1*, H. S. Jung1, W. K. Eo1, S. Y. Lee2, S. H. Kim3 & B. S. Shim4

1Mal Integrative Cancer Center, East West Neo Medical Center, Kyung Hee University, Seoul, Korea, 2Appalachian College of Pharmacy, Oakwood, VA, USA, 3Graduate School of East West Medical Science, 4College of Oriental Medicine, Kyung Hee University, Seoul, Korea

(*E-mail: sookyung@khu.ac.kr)

disclosure

The authors have no conflict of interest to declare.

references


doi:10.1093/annonc/mdq154
Published online 2 April 2010