

Kasabach-Merritt Syndrome Associated with Angiosarcoma of the Scalp Successfully Treated with Chemoradiotherapy

Shinichi Imafuku^{1,2}, Chisato Hosokawa¹, Yoichi Moroi¹ and Masutaka Furue¹

Department of Dermatology, ¹Graduate School of Medical Sciences, Kyushu University and ²Fukuoka University School of Medicine, Maidashi 3-1-1, Fukuoka city 812-8582, Japan. E-mail: dermatologist@mac.com

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Sir,

Kasabach-Merritt syndrome (KMS) is a condition of consumption coagulopathy in patients bearing vascular tumours and malformations. KMS is seen not only in infants bearing large haemangiomas, but has also been observed in various vascular diseases, such as blue-rubber-bleb nevus syndrome (1) and Osler-Weber-Rendu disease (2).

Angiosarcoma is a rare malignancy of vascular or lymphatic endothelial cell origin. Angiosarcoma has a poor prognosis and association with KMS, usually seen at advanced stage, makes the patients' clinical course worse (3). KMS with early stage angiosarcoma of the scalp has not been reported previously. We report here a case of a now 70-year-old patient with KMS associated with angiosarcoma of the scalp and disseminated intra-vascular coagulation, which was successfully controlled by anti-cancer treatment.

CASE REPORT

A 67-year-old Japanese man visited our department because an ulcer developed in an erythematous area of his scalp. He had injured his scalp a year previously. On examination, a large purple to reddish macule was observed on the scalp and forehead. Biopsy revealed complicated vascular spaces lined with the proliferation of atypical endothelial cells in the dermis (Fig. 1), thus establishing a diagnosis of angiosarcoma.

Intravenous administration of interleukin-2 (350,000 U daily) was initiated, but the tumour enlarged rapidly (Fig. 2). In accordance with the tumour growth, sudden thrombocytopenia ($72,000/\text{mm}^3$) was observed. Elevation of fibrinogen-derived protein (FDP, $16.1 \mu\text{g}/\text{ml}$), d-dimer ($24.6 \mu\text{g}/\text{ml}$) was also observed, in addition to a decrease in fibrinogen ($152 \text{ mg}/\text{ml}$), suggesting that the patient had DIC. Platelet-associated IgG was not detected. Metastatic lesions were not found by computed tomography and gallium scintigraphy. No obvious signs of infection or other complications that could have caused DIC were found. Anti-coagulopathy treatment was initiated, with administration of 2500 U/day danaparoid sodium. However, platelet count continued to decline ($15,000/\text{mm}^3$) and FDP kept increasing ($40.6 \mu\text{g}/\text{ml}$). 2500 U daily of heparin followed by 2000 mg daily of gabexate mesilate stopped the decrease in the platelet count; however, the count stayed in low. Hence, we assumed that DIC may be caused by the angiomatous



Fig. 1. Clinical appearance of the patient before chemoradiotherapy.

tumour itself and control of DIC might be achieved by anti-cancer therapy. Chemoradiotherapy was initiated immediately, along with continuation of anti-coagulopathy treatment. After X-ray irradiation at 40 Gy and weekly docetaxel therapy (90 mg/week, 3 consecutive weeks), FDP and fibrinogen were restored to normal ranges within 4 weeks. Recovery of thrombocytopenia was delayed because of the bone marrow suppression due to chemotherapy, but was restored to a normal range after completion of the combined treatment. A biopsy

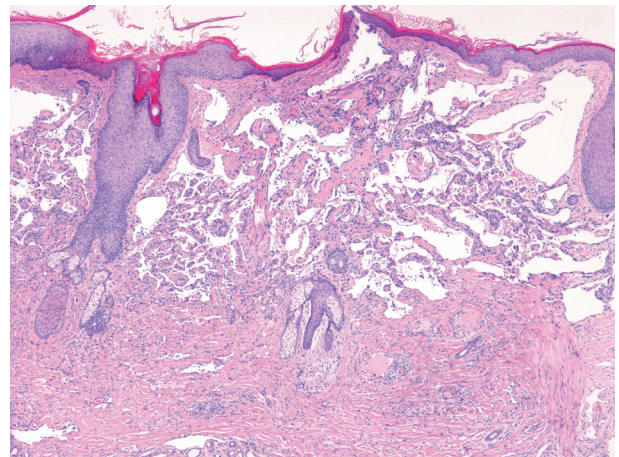


Fig. 2. Histological picture of the tumour before treatment. Irregular vascular spaces containing erythrocytes with atypical endothelial cells are seen. H&E staining $\times 100$.

specimen taken from the scalp after the chemoradiotherapy showed remaining vascular spaces lined with a few degenerated endothelial cells. Six months after the combination therapy, a small plaque reappeared on the scalp and additional 20 Gy were irradiated. Local recurrence has been observed after 12 months with lung metastasis, but the patient has survived for more than 36 months.

DISCUSSION

Our case revealed that angiosarcoma of the skin can cause DIC without mass formation or metastasis. This observation suggests that the pathological endothelial cells, especially when they are rapidly replicating, are responsible for the platelet consumption in angiosarcoma.

The mechanism of KMS has not yet been elucidated. Arcomana et al. (4) traced platelets by radio-labelling in a patient with angiosarcoma of the face and confirmed the accumulation of platelets in the metastatic lesions, but not in the primary lesion. Accumulation of radio-labelled platelets have also been observed in other benign haemangiomas (5), but some have argued that accumulation in the haemangioma may not be able to account for the whole decrease in platelet count compared with the amount sequestered in the spleen (3).

Radiation therapy, a known significantly effective tool for the life prolongation of angiosarcoma patients (6), may have improved DIC in this case. In neonatal KMS, radiation therapy is still the most effective therapy despite the growth retardation and late-onset malignancy (7). Most reports describe an immediate increase in platelet count after irradiation in neonatal haemangiomas (7).

It is also possible that docetaxel treatment stopped the DIC. Taxanes are potent anti-angiogenic agents and have shown to be effective on angiosarcoma (8) and Kaposi's sarcoma (9), a human herpesvirus (HHV)-8-driven angioproliferative disease. Docetaxel had less neurotoxicity and more potent angiogenesis inhibitory effect than paclitaxel (10); therefore the authors chose this agent for the immediate therapy.

The result was satisfactory, with improvement of DIC and more than 36 months survival.

To our knowledge this is the first report to describe KMS at the early stage of angiosarcoma of the scalp. The fact that anti-cancer therapy successfully inhibited DIC suggests the growth of the tumorous endothelial cells was responsible for the consumption coagulopathy, even without a mass. One should be alert for DIC markers in angiosarcoma of the skin, and immediate initiation of the anti-cancer therapy could help improve the DIC.

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