

# A case report of recurrent Merkel cell carcinoma with synchronous metastases to the heart and stomach

Joo Young Ha, MD<sup>a</sup>, Song Ee Park, MD<sup>a</sup>, Hee Sung Kim, MD, PhD<sup>b</sup>, Hoyoun Won, MD, PhD<sup>a</sup>, Beom Jin Kim, MD, PhD<sup>a</sup>, In Gyu Hwang, MD, PhD<sup>a,\*</sup>

## Abstract

**Rationale:** Merkel cell carcinoma (MCC) is an aggressive, rare neuroendocrine skin cancer. MCC metastasis to the heart is exceedingly rare and gastric metastases from MCC have rarely been reported.

**Patient concerns:** We described the case of an 82-year-old man diagnosed with recurrent MCC with cardiac and gastric metastasis who presented with poor oral intake and severe weight loss. The patient was diagnosed with MCC 3 years ago and treated with surgical resection and radiation.

**Interventions:** We performed stomach biopsy in edematous lesion. And fluoroscopy and ultrasound guided biopsy of the cardiac mass was performed.

**Diagnoses:** MCC with synchronous metastases to the heart and stomach.

**Outcomes:** The primary lesion had complete resolution and the patient remained disease free on regular follow-up every 6 months for 2 and half years. After MCC recurred, palliative anti-cancer therapy was considered but could not be performed due to the patient's poor performance status involved elderly, combined recurrent pneumonia.

**Lessons:** To our best knowledge, this is the first report of synchronous cardiac and gastric metastasis from cutaneous MCC worldwide. Although uncommon, MCC should be considered in clinical cases of synchronous metastasis.

**Abbreviation:** MCC = Merkel cell carcinoma.

**Keywords:** heart, Merkel cell carcinoma, metastasis, stomach

## 1. Introduction

Merkel cell carcinoma (MCC) is a aggressive, rare cutaneous malignancy that arises from Merkel cells located in the basal layer of the epidermis.<sup>[1]</sup> Merkel cells have synaptic contacts with somatosensory afferents and are associated with the sense of light touch discrimination of shapes and texture. The neuroendocrine origin of MCC is probably skin mechano-receptors, lymphoid cells, or pluripotent stem cells.<sup>[1]</sup>

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<sup>a</sup> Department of Internal Medicine, <sup>b</sup> Department of Pathology, Chung-Ang University College of Medicine, Seoul, South Korea.

\* Correspondence: In Gyu Hwang, Division of Hemato-oncology, Department of Internal Medicine, Chung-Ang University College of Medicine, 224-1 Heukseok-dong, Dongjak-gu, Seoul 06973, South Korea (e-mail: oncology@cau.ac.kr).

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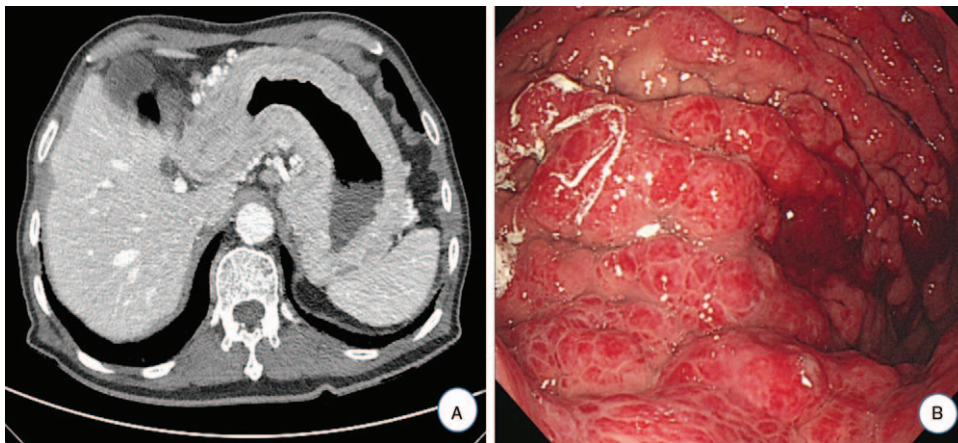
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The MCC incidence is a disease-specific mortality rate of 25% and rising, with a tripling of the overall incidence between 1986 and 2000. MCC is characterized by early loco-regional and distant metastasis and frequent relapse. The majority of patients present with skin-limited disease (66%), followed by nodal (27%), and distant metastasis (7%).<sup>[2]</sup> The incidence of regional disease is 52% to 59%, local recurrence is 25% to 30%, and distant metastatic disease in 34% to 36% of all cases of MCC.<sup>[3]</sup> The lymph node basin is the most common site of metastasis (60%), followed by distant skin (30%), lung (23%), central nervous system (18%), and bone (15%).<sup>[3]</sup>

The MCC metastasis to the heart is exceedingly rare with few cases of intracardiac metastasis reported in the literature. Also, gastric metastases from MCC have rarely been reported. We described a patient with synchronous gastric and cardiac metastasis from cutaneous MCC who presented with poor oral intake and severe weight loss.

## 2. Case presentation

An 82-year-old man presented with nausea, vomiting, and severe weight loss. His medical history included diabetes, hypertension, and MCC of the left buttock (T2NxM0), which had been treated with surgical resection and radiation therapy 3 years earlier. He had received surgical resection to 2.5-cm sized Left buttock mass and radiation 5400 cGy/27fx on tumor bed and regional lymph nodes. Three months later, primary lesion had excellent response and patient had regular follow-up for 2 and half years with no recurrence. Follow-up abdomen-pelvis computer tomography



**Figure 1.** (A) Stomach computed tomography diffuse wall thickening of entire stomach. (B) Esophagogastroduodenoscopy; diffuse, hyperemic edematous lesion.

(CT) scan performed every 6 months showed complete resolution.

Three years later, the patient presented with poor oral intake and body weight loss of 10-kg for a month. Patient was hemodynamically stable with no cardiorespiratory symptoms. On examination, hypoactive bowel sounds were auscultated and heart sounds were normal.

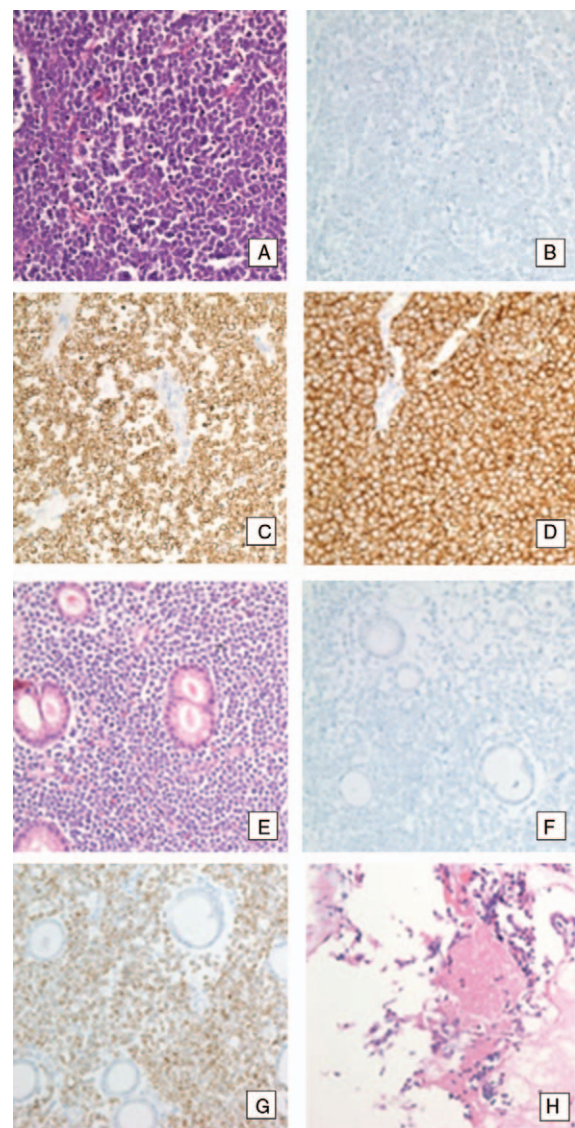
Stomach CT demonstrated diffuse wall thickening of entire stomach (Fig. 1A). Esophagogastroduodenoscopy revealed diffuse hyperemic edematous lesion at stomach body (Fig. 1B). The initial presumptive diagnosis of lymphoma or gastric carcinoma was based on biopsy of the stomach body. But immunohistochemistry revealed CK20-positive, TTF1-negative. This was in agreement with the result of previous pathologic findings of MCC on the buttock lesion (Fig. 2). Chest CT showed a 9.5-cm heterogeneously enhancing mass involving interatrial septum and left atrium (LA) inferior wall, and possible invasion of coronary sinus, right inferior pulmonary vein, right atrium (RA), and inferior vena cava (IVC) (Fig. 3A). Transthoracic echocardiography demonstrated a new echogenic mass at interatrial septum (6.5 × 3.6 cm) protruding to IVC inlet and extended to LA roof and pulmonary vein with mild pericardial effusion as compared with transthoracic echocardiography performed 11 months earlier (Fig. 3B).

Fluoroscopy and ultrasound guided biopsy of the cardiac mass was performed and histologic examination demonstrated atypical cells and immunohistochemistry with CK20, synaptophysin revealed positivity confirming metastatic MCC (Fig. 2). The patient was finally diagnosed relapsed metastatic MCC in stomach, heart, and multiple mediastinal lymph nodes with clear primary lesion.

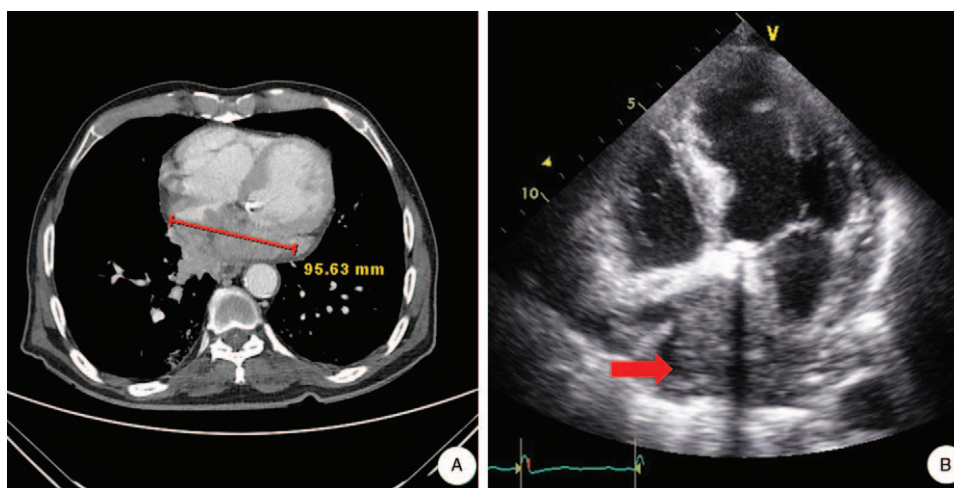
Palliative anti-cancer therapy (including chemotherapy, immunotherapy, or radiotherapy) was considered but could not be performed due to the patient's poor performance status involved elderly, combined recurrent pneumonia, and poor economic status. He died of disease progression during palliative care.

### 3. Discussion

The MCC was a rare and highly aggressive cutaneous cancer that grows rapidly over weeks to months. Relapse is frequent and recurrence rate is up to one half of patients. Most common sites of distant metastasis of MCC are distant lymph nodes (27–60%), distant skin (9–30%), lung (10–23%), central nervous system (18.4%), and bone (15.2%).<sup>[4]</sup> However, in this case, MCC



**Figure 2.** Histopathologic examination of previous buttock mass biopsy in July 2013. (A) H&E ×400. (B) TTF1-negative. (C) CK20-positive. (D) Synaptophysin-positive. Histopathologic examination of stomach biopsy in June 2016. (E) Stomach, body, H&E ×400. (F) TTF1-negative. (G) CK20-positive. (H) Histopathologic examination of heart biopsy, H&E ×400.



**Figure 3.** (A) Chest computed tomography: a 9.5-cm-sized irregular heterogeneous enhancing mass involving interatrial septum and left atrium (LA) inferior wall. (B) Transthoracic echocardiography-echogenic mass at interatrial septum (6.5 × 3.6cm) protruding to inferior vena cava (IVC) inlet and probably extended to LA roof and pulmonary vein.

relapsed in heart and stomach within 6 months of follow-up, which is a very rare site of metastasis, with rapid progression.

Metastasis to the heart is rare with very few cases reported in the literature. Cardiac metastases from all tumors are relatively common, and autopsy series show a range of 2.3% to 18.3%. Malignancies with a high prevalence of cardiac metastases include melanoma, lung, breast, soft tissue sarcomas, lymphoma, and leukemia.<sup>[5]</sup>

On the contrary, metastasis to the stomach is a very rare condition. The stomach was reported as a metastatic site in 0.2% to 0.7% of cases on autopsy.<sup>[6]</sup> Lung cancer, breast cancer, and malignant melanoma are reported most often as primary tumors associated with gastric metastasis.<sup>[6]</sup> Hence, we initially presumed advanced stomach cancer with cardiac metastasis. The best follow-up evaluation strategy of MCC was unclear. It usually relapses frequently, and the spread is exceedingly rapid. Clinicians should consider MCC metastasis in patients who present with cardiorespiratory or gastrointestinal symptom with a background of MCC.

Metastatic MCC was considered as chemotherapy sensitive with frequent initial regression and a response rate up to 75%.<sup>[7]</sup> However, chemotherapy shows short duration with a median overall survival rate of 9 months and high toxicity in elderly patients.<sup>[7]</sup> MCC generally affects immunosuppressed and elderly individuals, with the average age of 76 years.<sup>[8]</sup> Also, our patient was 82 years old, the eastern cooperative oncology group performance Status (ECOG-PS) 3; hence, we could not proceed with the cytotoxic chemotherapy.

Despite 60% to 75% response rates with platinum/etoposide combination and anthracycline-based regimens, toxicity can be prohibitive for this MCC patient population.<sup>[9]</sup> Less toxic and more effective agents were clearly needed. Immunotherapies may be effective in metastatic MCC. A recent study on pembrolizumab in patients with advanced MCC showed 56% objective response rate.<sup>[10]</sup> Immunotherapy was not possible due to the patient's recurrent pneumonia and poor economic status.

#### 4. Conclusion

In summary, MCC is a highly aggressive skin cancer with frequent relapse. To our best knowledge, this is the first report of

MCC metastasis to heart and stomach. Relapse of MCC should be considered in cases with history of cardiorespiratory or gastrointestinal symptoms. Cytotoxic chemotherapy maybe effective in metastatic MCC but toxicity can be a problem for these elderly patients. Less toxic and more curative treatments are needed for metastatic MCC.

#### Author contributions

**Conceptualization:** In Gyu Hwang

**Data curation:** Hee Sung Kim, Hoyoun Won, Beom Jin Kim, In Gyu Hwang

**Data curation:** Song Ee Park, Hee Sung Kim, Hoyoun Won, Beom Jin Kim, In Gyu Hwang.

**Formal analysis:** Joo Young Ha, Hee Sung Kim, Hoyoun Won, Beom Jin Kim, In Gyu Hwang

**Methodology:** Hee Sung Kim, Hoyoun Won, Beom Jin Kim, In Gyu Hwang

**Methodology:** In Gyu Hwang.

**Project administration:**

**Resources:** Hee Sung Kim, Hoyoun Won, Beom Jin Kim, In Gyu Hwang

**Supervision:** In Gyu Hwang

**Validation:** Joo Young Ha, Song Ee Park, In Gyu Hwang

**Visualization:** Hee Sung Kim, Hoyoun Won

**Writing – original draft:** Joo Young Ha, Song Ee Park, In Gyu Hwang

**Writing – original draft:** Joo Young Ha, Song Ee Park, In Gyu Hwang.

**Writing – review & editing:** Joo Young Ha, Song Ee Park, Hee Sung Kim, Hoyoun Won, Beom Jin Kim, In Gyu Hwang

**Writing – review & editing:** Joo Young Ha, Song Ee Park, Hee Sung Kim, Hoyoun Won, Beom Jin Kim, In Gyu Hwang.

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