CASE REPORT

A 68-year-old female patient presented herself at the dermatology clinic with a soft, friable mass on the vertex of scalp. The mass which had been grown for one year, had a tendency of bleeding easily (Fig. 1). She did not complain of any itching or tenderness. No regional lymph node could be palpated in the neck or the supraclavicular area. The result of the remaining systemic examination showed her being pale in facial appearance and having some blood-tinged fecal materials in a digital rectal examination. She denied any relevant family history of skin cancer. She received diagnostic incisional skin biopsy in the scalp tumor. The finding of the hematoxylin and eosin stained sections of the specimen showed multiple solid tumor lobules with intervening fibrous stroma. As shown in (Fig. 2A), the neoplastic cells had large vesicular nuclei and prominent nucleoli with common mitotic features and scattered vacuolated cells, singly or in clusters. Immunohistochemically, the tumor cells showed positive reaction for cytokeratin and negative for S-100 protein. The vacuolated cell could be labeled with epithelial membrane antigen (EMA). With oil-red O stain on the fresh specimen, fine fat droplets, shown in the cytoplasm of many tumor cells, were profusely expressed in the clusters of vacuolated cells (Fig. 2B) indicative of sebocyte origin. The histopathologic picture was compatible with a diagnosis of a sebaceous carcinoma.

The finding of patient’s large sebaceous neoplasm prompted the dermatologists to pursue for the investigation for visceral malignancies under the suspicion of a case of Muir-Torre syndrome. She received a colonoscopic study showing a multilobate polypoid mass spanning 3 cm of length at 10 cm from anal verge. The pathologic finding of the colonoscopic biopsy was an adenocarcinoma. The results of the whole body computerized tomography scan and positron emission tomography showed no evidence of metastases or other visceral tumors. The patient then received a lower anterior resection of the rectosigmoid colon with lymph node dissection. The histopathologic diagnosis of the excised tumor was a moderately differentiated adenocarcinoma without lymph node involvement. The carcinoma was staged at IIA (T3N0M0) according to the TNM staging system for colorectal carcinoma.

Subsequently, the patient received a total excision of the scalp neoplasm with grafting. Histopathologically, most tumor cells revealed a picture of sebaceous carcinoma. But, in one part of the tumor, the neoplastic cells had basaloïd cells with occasional presence of melanin pigments but devoid of vacuolated cells. As shown in (Fig. 3, 4), the pathologic features of peripheral palisading and stromal retraction were typical of a BCC, which were not found in other parts of the tumor. Reaction with oil-red O stain and EMA was completely absent in this region (Fig. 5). Based on those findings, the patient was
diagnosed as MTS with coexisting sebaceous carcinoma and BCC within the same skin lesion. The patient had received clinic follow-up for 18 months and showed no recurrences of any lesion in the scalp and colon.

DISCUSSION

MTS is a rare cancer-associated disorder with an autosomal dominant inheritance in more than 50% reported cases. The clinical diagnostic criteria are the presence of at least one sebaceous neoplasm (adenoma, epithelioma, carcinoma, or keratoacanthoma with sebaceous differentiation) associated with at least a visceral malignancy. In the absence of sebaceous tumors, the MTS diagnosis can be made in a patient with multiple keratoacanthomas, multiple visceral malignancies, and a MTS family history. The most common skin tumor and visceral malignancy are sebaceous adenoma and colorectal adenocarcinoma, respectively. Other reported non-skin malignancies include genitourinary carcinomas, breast carcinomas, hematologic malignancies, head and neck cancers, and neoplasma of the small intestine.\(^1,2\) The peculiar skin neoplasm in our patient should be differentiated from BCC with sebaceous differentiation (BCCSD), which has an overall architecture of a BCC, i.e. basaloid cells arranged in a palisade at the periphery, and separation from the adjacent stroma by clefts, instead of two separated zones of BCC and sebaceous carcinoma as in the present case. In addition, the BCCSD neoplastic cells generally have oval, monomorphous nuclei although they may sometimes be pleomorphic with many mitoses.\(^3\) But severe nuclear atypia, prominent nucleoli, and frequent mitoses are commonly found in most parts of the tumor, which are characteristic of a sebaceous carcinoma component.\(^3\) The coexistence of sebaceous carcinoma and BCC in this case adds to the list of the sebaceous neoplasms associated with MTS. In 2006, Levy et al. first reported a collision tumor of sebaceous
carcinoma and BCC on the left lower eyelid of an 80-year-old woman, who was not diagnosed as MTS after oncologic survey. Histopathologically, the lesion of their reported patient showed BCC components and sebaceous carcinoma as well as showing a BCCSD-like transition zone. However, it is less convincing than the present case since EMA or oil-red O stain was not used to show the sebaceous nature of the vacuolated cells in the lesion.

A subset of MTS which is now considered a phenotypic variant of hereditary non-polyposis colorectal cancer (HNPCC), is also known as Lynch syndrome. HNPCC is a genetically determined colon cancer syndrome defined by the Amsterdam criteria which include a positive family history of colon with or without other visceral cancers, early onset of multiple primary colorectal cancer, and extracolonic malignancies. More than 95% of neoplasms characterizing the HNPCC tumor spectrum have been found to have mutations of DNA mismatch repair (MMR) genes: MLH1, MSH2, PMS2, or MSH6, resulting in high-grade microsatellite instability. Germline mutation in MLH1 and MSH2 genes accounts for many DNA defects in these patients. Thanks to the advances in molecular diagnoses, microsatellite analysis, immunohistochemical staining for human MMR genes, or direct gene analysis are all helpful in identifying the underlying molecular derangement in MTS and HNPCC patients. However, the presence of MMR mutations is not a prerequisite for diagnosing MTS. Moreover, microsatellite analysis can not detect all MTS or HNPCC patients. The findings of immunohistochemical studies may be false negative because certain gene defects could express MMR proteins that are antigenically recognizable but functionally deficient.

In summary, we report of a new case of MTS, presenting with an unreported sebaceous carcinoma-BCC collision tumor. With the list of
MTS-related sebaceous neoplasms getting longer, the physician should keep a high index of suspicion for MTS in the presence of any single cutaneous neoplasm with sebaceous differentiation. Patients or family members with skin lesions associated with MTS are recommended for regular screening of internal malignancy and even genetic counseling.

REFERENCES