

- mar-plantar erythrodysesthesia ('hand-foot' syndrome). Ann Oncol. 2007;18:1159-64.
3. Hueso L, Sanmartín O, Nagore E, Botella Estrada R, Requena C, Llombart B, et al. Eritema acral inducido por quimioterapia: estudio clínico e histopatológico de 44 casos. Actas Dermosifiliogr. 2008;99:281-90.
 4. Kim RJ, Peterson G, Kulp B, Zanotti KM, Markman M. Skin toxicity associated with pegylated liposomal doxorubicin (40 mg/m²) in the treatment of gynecologic cancers. Gynecol Oncol. 2005;97:374-8.
 5. Lotem M, Hubert A, Lyass O, Goldenhersh MA, Ingber A, Peretz T, et al. Skin toxic effects of polyethylene glycol-coated liposomal doxorubicin. Arch Dermatol. 2000;136:1475-80.
 6. Skelton H, Linstrum J, Smith K. Host-vs.-altered-host eruptions in patients on liposomal doxorubicin. J Cutan Pathol. 2002;29:148-53.
 7. English III JC, Toney R, Patterson JW. Intertriginous epidermal dysmaturation from pegylated liposomal doxorubicin. J Cutan Pathol. 2003;30:591-5.
 8. Korver GE, Ronald H, Petersen MJ. An intertrigo-like eruption from pegylated liposomal doxorubicin. J Drugs Dermatol. 2006;5:901-2.
 9. Saini A, Berruti A, Sperone P, Bitossi R, Tampellini M, Dogliatti L, et al. Recall inflammatory skin reaction after use of pegylated liposomal doxorubicin in site of previous drug extravasation. Lancet Oncol. 2006;7:186-7.
 10. Castaño E, Rodríguez Peralto JL, López Ríos F, Gómez C, Zimmermann M, Iglesias Díez L. Keratinocyte dysplasia: an usual finding after transplantation or chemotherapy. J Cutan Pathol. 2002;29:579-84.
 11. Cady FM, Kneuper Hall R, Metcalf JS. Histologic patterns of polyethylene glycol-liposomal doxorubicin-related cutaneous eruptions. Am J Dermatopathol. 2006;28:168-72.

Merkel Cell Carcinoma at a Site of Vaccination

B. Monteagudo,^a M. Cabanillas,^a J.A. García-Rego,^b and J.M. Cacharrón^a

^aServicio de Dermatología, ^bServicio de Anatomía Patológica, Complejo Hospitalario Arquitecto Marcide-Novoa Santos, Ferrol, A Coruña, Spain

To the Editor:

Adverse skin reactions from vaccination are very varied and can be local or generalized. Immediately after immunization, erythema, edema, pain, and induration may occur exclusively on the site of the injection, and these disappear spontaneously. Less frequently, papules or nodules appear that can persist for months or even years, consisting of nonspecific granulomatous or lymphoid reactions.^{1,2}

Various tumors have also been described on the site of vaccine injections: basal cell carcinoma, squamous cell carcinoma, malignant melanoma, malignant fibrous histiocytoma, dermatofibrosarcoma protuberans (including the pigmented variant, Bednar tumor), dermatofibroma, and marginal zone B-cell lymphoma. The delay between vaccination and the appearance of the tumor varies widely, from days in the case of lymphomas, to more than 30 years in many patients with basal cell carcinoma.³⁻⁵

In this letter we report the case of an 84-year-old man who consulted with a tumor on the right arm that appeared a week after receiving an influenza vaccination in the same location. Histopathological and immunohistochemical studies provided the basis for a diagnosis of Merkel cell carcinoma (MCC).

The patient was an 84-year-old man with a history of Parkinson disease, referred to the Dermatology Department because of a fast-growing asymptomatic lesion in the right deltoid region present for 2 months. According to the patient and his family, the lesion first appeared on the site of the influenza vaccination received a week previously during the 2007 vaccination campaign (trivalent

vaccine of inactive and fractionated viruses containing the following antigens: A/Solomon Islands/3/2006 [H1N1]-like strain, A/Wisconsin/67/2005 [H3N2]-like strain, and B/Malaysia/2506/2004-like strain). His physician initially diagnosed an abscess caused by administration of the vaccine, and prescribed oral antibiotics prior to draining.

Examination revealed a hard and poorly defined tumor, measuring 5 cm × 3 cm, located on the external surface of the right arm. The tumor surface showed many violaceous dome-shaped nodules (Figure).

A biopsy was taken to confirm a provisional diagnosis of pseudolymphoma or lymphoma caused by the vaccination and the ensuing histopathological study showed a tumoral infiltration of the dermis by rounded monomorphic cells of medium size with scant cytoplasm, round nuclei, and small nucleoli, forming solid masses or small trabecular structures. The mitotic index was high. Immunohistochemical study proved positive for cytokeratin 20, neuronal specific enolase, chromogranin A, and chromogranin B. There was no immunoreactivity to protein S-100, leukocyte common antigen, CD20, CD3, cytokeratin 7, or thyroid transcription factor 1. A diagnosis of MCC was made and the patient was referred to the Oncology Department.

MCC—first described by Toker in 1972—is a rare malignant cutaneous tumor of neuroendocrinial origin with poor prognosis and rapid progression. It tends to present as a fast-growing nodular erythematous lesion on the head, neck, or limbs in people aged over 65 years.^{6,7}

The pathogenesis is unknown although various factors have been implicated: a) ultraviolet radiation—a greater



Figure 1. Poorly defined tumor 5 cm × 3 cm in diameter, with multiple violaceous nodules on the surface, located on the outer surface of the right arm.

incidence in areas exposed to sunlight in patients with a history of basal or squamous cell carcinoma; b) other carcinogens—frequent occurrence in areas of irradiation, erythema ab igne, or following chronic exposure to arsenic; c) immunosuppression—from treatment in a liver or heart transplant setting or rheumatic diseases; and in patients with hematologic neoplasias or infection with the human immunodeficiency virus (HIV); d) cases described in patients with congenital ectodermal dysplasia or Cowden disease; and e) oncogenic viruses—although the role of Epstein-Barr virus has not been proven.⁸⁻¹⁰

In conclusion, we present a case of MCC located at a site of vaccination. As we have encountered no similar cases in the literature to date—even though the target population for anti-influenza vaccination overlaps extensively with those at greater risk of developing MCC (individuals aged 65 years or older and immunodepressed patients)—we believe this is a case of simple coincidence. However, the close temporal relationship could indicate that vaccination causes a local immune alteration through an unknown pathogenic mechanism that would facilitate

the development of MCC patients with a predisposition to the disease.

Correspondence:
Benigno Monteagudo Sánchez
C/Alegre, 83-85, 3.^ºA,
15401 Ferrol, A Coruña, Spain
benims@hotmail.com

Conflicts of Interest

The authors declare no conflicts of interest.

References

- Nikkels AF, Nikkels Tassoudji N, Pierard GE. Cutaneous adverse reactions following anti-infective vaccinations. *Am J Clin Dermatol.* 2005;6:79-87.
- Wu JJ, Huang DB, Pang KR, Tyring SK. Vaccines and immunotherapies for the prevention of infectious diseases having cutaneous manifestations. *J Am Acad Dermatol.* 2004;50:495-528.
- Reed WB, Wilson-Jones E. Malignant tumors as a late complication of vaccination. *Arch Dermatol.* 1968;98:132-5.
- Green JJ, Heymann WR. Dermatofibrosarcoma protuberans occurring in a smallpox vaccination scar. *J Am Acad Dermatol.* 2003;48:S54-5.
- May SA, Netto G, Domíati Saad R, Kasper C. Cutaneous lymphoid hyperplasia and marginal zone B-cell lymphoma following vaccination. *J Am Acad Dermatol.* 2005;53:512-6.
- Alonso A, Daudén E, Álvarez Ruiz S, Ríos L, Fraga J, García Díez A. Placa eritematosa frontal de crecimiento rápido. *Actas Dermosifiliogr.* 2005;96:264-6.
- Swann MH, Yoon J. Merkel cell carcinoma. *Semin Oncol.* 2007;34:51-6.
- Paradela de la Morena S, Peña C, Fonseca Capdevila E. Carcinoma de Merkel. *Piel.* 2005;20:266-76.
- Kanitakis J, Euvrard S, Chouvet B, Butnaru AC, Claudio A. Merkel cell carcinoma in organ-transplant recipients: report of two cases with unusual histological features and literature review. *J Cutan Pathol.* 2006;33:686-94.
- Shaw M, Warren S, Groben P, Gulley ML. No evidence of Epstein-Barr virus association with Merkel cell carcinoma. *J Cutan Pathol.* 2006;33:624-8.

Eruptive Clear Cell Acanthoma

V. Morillo,^a P. Manrique,^a I. Zabalza,^b and J.L. Artola^a

^aSección de Dermatología, ^bServicio de Anatomía Patológica, Hospital de Galdakao, Galdakao, Vizcaya, Spain

To the Editor:

Clear cell acanthoma (CCA) was described by Degos et al¹ in 1962. They suggested that this was a benign epithelial tumor of epidermal origin rather than a reactive hyperplasia of

inflammatory origin, although they questioned this affirmation 8 years later. In recent years, several authors have vindicated the inflammatory nature of this lesion, and a number of writers view the condition as a localized form of psoriasis.^{2,3}