Extra Mammary Myofibroblastoma of the Foot: A Case Study

Emily Keeter, DPM[1]; Jonathan Pollack, MD[2]; John J Holtzman, DPM,FACFAS[1,2]
[1]SSM Health DePaul (PMSR/RRA), [2]Mercy Hospital

Abstract

Extra Mammary Myofibroblastoma is a benign stromal type tumor found outside of breast tissue. To date, there have been no published studies with an Extra Mammary Myofibroblastoma in the foot. Here we describe a 77-year-old patient who presents with a plantar soft tissue mass who undergoes surgical excision.

Introduction

Mammary type Myofibroblastoma (MTMF) is a benign stromal tumor that is morphologically identical to a myofibroblastoma found in breast tissue (1). Mammary type is found outside of the breast tissue and is also referred to as extra mammary. In 1987 Wargotz et al described the first documented myofibroblastoma of the breast as a benign tumor found typically in adult males (2). While this tumor and its counterpart, mammary type myofibroblastoma, continue to be found more commonly in males, due to mammograms and breast screenings, the incidence between men and women has decreased slightly (3).

There have been less than 160 documented cases of MTMF, with Howitt et al providing the largest case series with 143 cases (4,1). From the current literature we are able to define MTMF as a slow-growing, painless mass that is typically subcutaneous in nature. It usually occurs as a freely moveable mass, it is unencapsulated and well circumscribed (5,1). Histologically, this tumor is typically positive for Desmin, CD34, smooth muscle actin (6,5,4,1) with a loss of Rb expression (4,2).

To date there has not been a documented case of MTMF in the foot, and only two other cases documented distally to the inguinal region, one in the popliteal fossa and one in a patient's medial thigh (5).

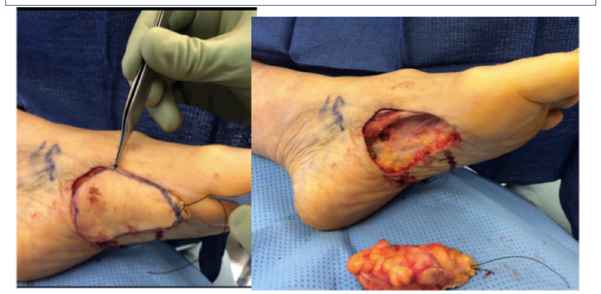

Figure 1. Surgical Excision of soft tissue mass

Case Report/ Methods

A 77-year old female presented to our office with a left plantar mass present for roughly two years. Patient stated it was diagnosed as a lipoma two years ago via MRI from another provider. Her past medical history was positive for breast cancer with subsequent double mastectomy and chemotherapy, arthritis, diverticulosis, endocervical polyp, IBS, postmenopausal, and insomnia.

Her physical exam revealed two masses present on the plantar arch, left foot, that were freely moveable, and non pulsatile. She had normal muscle strength and ROM, with no pain on palpation of the soft tissue masses. An MRI was ordered with and without contrast of the patient's left foot, which was read as an atypical lipomatous tumor/ well differentiated liposarcoma.

A punch/incisional biopsy was done by the Plastic Surgeon on the mass given it's location and more superficial proximity to the skin. This report was inconclusive. The Plastic Surgery Service recommended a full excision with staged reconstruction.

Plastic surgery elected to complete the full excision with 2cm margins around the extent of the tumor (figure 1). Superficial extension of the mass was noted throughout the specimen. The mass measured approximately 6.8 cm, it was well circumscribed with yellow coloring and nodular appearance with adipose tissue surrounding it . A bi-laminant skin substitute was placed once the tumor excision was completed (figure 2). A wound vac allowed complete compression of the graft and allow the entire construct to remain in place for a week until full pathology review could be complete. The official pathological report described the mass as a spindle cell neoplasm with stubby nuclei and an indistinct cell cytoplasm.

Approximately 4 weeks post graft placement, the area was able to be skin grafted with a standard thin split-thickness skin graft. Given the area was a relatively non weight bearing portion of the foot, complete graft take was expected and also to be stable over time. Indeed, 3 weeks post op, the patient began a walking protocol to advance as tolerated over the following 6 weeks (figure 3). Complete wound healing and function were restored.

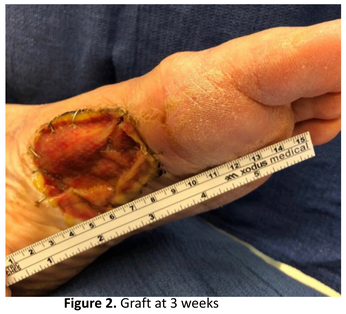

Figure 2. Graft at 3 weeks

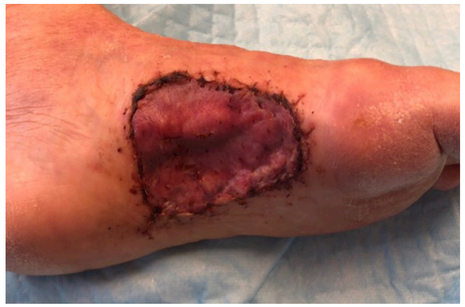

Figure 3 Graft at 3 weeks

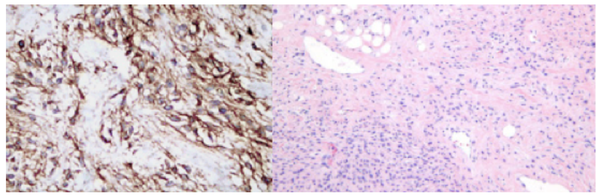

Figure 4 CD34+ and HE stain positive for MTMF

Discussion

In the documented cases of MTMF, a majority are found along the embryonic milk line, which includes the mid axilla to the medial groin (5,1). The embryonic milk line can have accessory breast tissue, which correlates with the commonality of MTMF in this region (5).

On examination these masses are typically painless, freely moveable, well circumscribed, superficial, and unilateral (5,7,3,1). The average size of these masses has been reported from 5.5 cm to 6.6 cm (4,5,7,1). If the tumors are present outside the embryonic milk line, than clinicopathology is needed for diagnosis (5).

Histologically these tumors do have a range of features that can vary. Typically they are Desmin positive, CD34 positive and smooth muscle actin (5,7,1) (figure 4). Less frequently, they will also have alterations in chromosomes, more specifically 13q14, and a loss of Rb expression (4,7,3). The haphazard arrangement of spindle cells and collagen within these tumors is also a pathologic finding.

Possible differential diagnosis for MTMF include spindle cell lipoma, cellular angiofibroma, leiomyoma. Possible differential diagnosis for our particular case included plantar fibroma, lipoma, and fibrosarcoma

This the first documented case of MTMF in a foot and should be considered in the differential diagnosis for plantar foot soft tissue masses. Although a rare benign tumor, this case should help to increase the awareness and understanding of this condition.

References

1. Sulliva CB, Dass, C, Lee J, Bayon R. "Mammary-Type Myofibroblastoma of the Larynx: A Rare Tumor of the Head and Neck." *Otolaryngology Case Reports*, 2 Nov. 2018, pp. 20–22., doi:10.1016.
2. Wargotz ES, Weiss SW, Norris HJ. Myofibroblastoma of the breast. Sixteen cases of a distinctive benign mesenchymal tumor. AM J Surg Pathol. 1987;11:493-502
3. Magro, G. "Mammary Myofibroblastoma: A tumor with wide morphologic spectrum." *Arch Pathol Lab Med*, vol. 132, Nov. 2008
4. Howitt BE, Fletcher C. "Mammary Type Myofibroblastoma: Clinicopathologic Characterization in a Series of 143 Cases." *The American Journal of Surgical Pathology*, vol. 40, no. 3, pp. 361–367., doi:10.107.
5. Abdul- Ghafar J, Din NU, Ahmad Z, Billings, S. "Mammary-Type Myofibroblastoma of the Right Thigh: a Case Report and Review of the Literature." *Journal of Medical Case Reports*, 2015, doi:10.1186/s13256-015-0601-0.
6. Mammary Type Myofibroblastoma. Surgical Pathology Criteria, Stanford School of Medicine Web site. Available at: http://www.surgpathcriteria.edu/softfib/mammary-type-myofibroblastoma/printable.html. Accessed April 16, 2019
7. Soft tissue Fibroblastic/myofibroblastic tumors. Mammary-type Myofibroblastoma. Pathology Outlines Web site. March 2019. Available at: http://www.pathologyoutlines.com/topic/softtissuemammarytypemyofibroblastoma.html. Accessed April 16, 2019