Mycetoma Involving the Heart

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A 59-year-old female farm worker developed a dark-centered cutaneous lesion in her right leg, associated with progressive swelling for the past 35 years. During the past 4 years, she also had dry cough and dyspnea, which became more intense for the past 6 months. She complained of asthenia and weight loss of 10 kg in the previous year. The patient had diabetes mellitus and hypertension. On physical examination, she had crackling rale at the base of the lungs, edema of the distal right lower limb, with several sinuses and ulcerated lesions of ≈1 cm with purulent discharge (Figure 1).

Radiographic studies showed lytic foci of destruction in the medullary cavity with bone expansion, reactive sclerosis, and thickening of the cortex in right tibia and in bones of the right foot. Metatarsal bones also had cortical scalloping (Figure 2A and 2B). T1-weighted magnetic resonance image of the right foot with fat suppression after intravenous gadolinium demonstrates numerous round lesions containing small low-signal foci, also known as dot-in-circle sign, representing granulation tissue surrounded by intervening fibrous septa, whose unique appearance is highly suggestive of mycetoma (Figure 2C).1,2 Chest radiograph demonstrated prominence of the interstitial markings, which on computerized tomography scan corresponded to interstitial lung disease with traction bronchiolitis indicating fibrosis. A heterogeneous lesion, adjacent to the inferior wall and apex of the left ventricle, with solid and cystic characteristics was observed on the transthoracic echocardiography (Figure 4). To better characterize this lesion and to understand its relation with the heart, magnetic resonance imaging was performed, which showed that this lesion was located between the heart and the diaphragm and that it was heterogeneous and predominantly solid, with cystic (hypointense on T1-weighted images and hyperintense on T2-weighted images) and hemorrhagic (hyperintense on T1-weighted and T2-weighted images) areas, as seen in Figure 5A and 5D (T1-weighted images) and Figure 5B and 5E (T2-weighted images). There were signs of invasion of the inferior wall of the left ventricle, the septum, and the wall of the right ventricle seen on steady-state free precession cine images (see Movies I and II in the online-only Data Supplement) and, more obviously, on myocardial delayed gadolinium enhanced images (Figure 5C and 5F), in which it is possible to identify enhancement of the lesion with deep extension to the myocardium.

Ultrasound-guided subxiphoid needle biopsy of this lesion revealed Gram-positive filamentous bacteria compatible with actinomycetoma. The skin biopsy of the right foot also showed actinomycetoma. Surgical removal of the thoracic lesion was not considered because of the lack of limits between the lesion and the myocardial wall. The patient refused limb amputation. On 4-year follow-up of chemotherapeutic treatment, there were no significant changes.

Mycetoma is a chronic progressive granulomatous disease of the skin and subcutaneous tissue, which sometimes involves muscle, bones, and neighboring organs. It primarily affects inferior members and is characterized by a triad of edema, abscess formation, and fistulae. The port of entry is subcutaneous skin trauma. In the majority of patients with actinomycetoma, the infection remains localized and dissemination from the initial site is exceptionally rare. Mycetomas can be produced by fungi (eumycetoma) or aerobic bacteria (actinomycetoma). Both types have similar clinical findings.3 Etiologic agents include Actinomadura madurae, Actinomadura pelletieri, Nocardia spp, Streptomyces somaliensis, and Streptomyces paraguayensis. This condition occurs mainly in men, usually 20 to 40 years old, and farmers. Diagnosis is based on histopathologic findings, culture, and microscopy of the granule.3

Mycetoma caused by bacteria can usually be managed with antibacterial medication, whereas infections with fungi require antifungal medication and surgery.4 A delayed diagnosis may require extensive excision, which may not always be feasible, as was in this case.

Disclosures

None.

References


Figure 1. Right lower foot with several ulcerated lesions with purulent discharge.

Figure 2. Right foot evaluated by lateral (A) and anteroposterior (B) x-ray projections showing multiple lytic foci of destruction in the medullary cavity with bone expansion, reactive sclerosis, and thickening of the cortex in right tibia and in bones of the right foot. Metatarsal bones also had cortical scalloping. C, T1-weighted magnetic resonance image of the right foot with fat suppression after intravenous gadolinium demonstrate round lesions containing small low-signal foci, also known as dot-in-circle sign (white arrows), highly suggestive of mycetoma.

Figure 3. A. Chest computerized tomography in the lung window showing thickening of the interlobular septa and small cysts in the periphery of both lungs corresponding to interstitial lung disease with signs of fibrosis (black arrowheads). B through D, Postcontrast chest computerized tomography in the mediastinal window demonstrating a heterogeneous lesion, adjacent to the inferior wall and apex of the left ventricle, with solid and cystic areas (white arrows).

Figure 4. Transthoracic echocardiography shows a heterogeneous lesion adjacent to the inferior wall of the left ventricle (LV), with solid and cystic (anechoic) areas, without clear limits with the myocardium (white arrows).
Figure 5. Cardiac magnetic resonance imaging in the 2-chamber view (A through C) and in the short-axis view (D through F) demonstrating a heterogeneous lesion (white asterisk), as seen in the T1-weighted images (A and D), with cystic areas (better depicted on the T2-weighted images; B and E), located between the heart and the diaphragm, with signs of invasion of the inferior wall of the left ventricle, the septum, and the wall of the right ventricle, seen in greater detail using the myocardial delayed enhancement technique (C and F).
Movie Legend

**Movie 1.** Cardiac MRI SSFP cine images in the 2-chamber view demonstrating a heterogeneous lesion located between the heart and the diaphragm, with signs of invasion of the inferior wall of the left ventricle. Recommended application for viewing this movie file: Quicktime or Windows Media Player

**Movie 2.** Cardiac MRI SSFP cine images in the short-axis view demonstrating a heterogeneous lesion located between the heart and the diaphragm, with signs of invasion of the inferior wall of the left ventricle, the septum and the wall of the right ventricle. Recommended application for viewing this movie file: Quicktime or Windows Media Player

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