Case Report
An Unexpected Cause of a Subcutaneous Nodule: A Case Report of Dirofilaria Infection

Bruno Man-Hon Cheung,1 Yi-Lan Huang,2 Yie-Wen Lin,3 Yung-Sen Chang,4 and Shian-Min Liu5

1 Division of Infectious Diseases, Department of Internal Medicine, Tainan Municipal Hospital, No. 670, Chung Te Road, Tainan 701, Taiwan
2 Department of Surgery, Kaohsiung Municipal Gangshan Hospital, No. 12, Shou-Tian Road, Kaohsiung City 820, Taiwan
3 Office of Deputy Superintendent, Tainan Municipal Hospital, No. 670, Chung Te Road, Tainan 701, Taiwan
4 Department of Pediatrics, National Taiwan University Hospital, No. 7, Chung-Shan South Road, Taipei 100, Taiwan
5 Department of Pathology, Tainan Municipal Hospital, No. 670, Chung Te Road, Tainan 701, Taiwan

Correspondence should be addressed to Bruno Man-Hon Cheung, mhcheung2005@gmail.com

Received 18 August 2011; Accepted 9 October 2011

Academic Editor: S. Yazar

Copyright © 2012 Bruno Man-Hon Cheung et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Humans are not natural hosts of Dirofilaria; however, pulmonary or subcutaneous infections may occur through mosquitoes transmission. Patients presenting with simple subcutaneous nodules may not seek early medical attention, and hence systemic involvement through hematogenous spread may occur. Definitive diagnosis of Dirofilaria infection is made by histopathological examinations of the infected tissues. We report a patient with an incidental diagnosis of Dirofilaria infection confirmed by histopathological findings of a subcutaneous nodule on the right thigh. The source of infection remains unknown.

1. Introduction
Dirofilariasis is caused by a zoonotic filarial nematode. It is transmitted to humans by Culex, Aedes, or Anopheles mosquitoes, which ingest blood-containing microfilaria from affected dogs, cats, or raccoons. The filariae, also known as the “heartworm”, lodge in the right ventricle and pulmonary arteries of hosts, causing dyspnea and anemia. It is most commonly seen in tropical and subtropical areas, and canine infection is more common in southern Europe [1–3]. Human dirofilariasis is rare. It usually presents with nodular lesions in the lung, subcutaneous tissues, peritoneal cavity, or eyes. Dirofilaria does not mature into fully gravid worms in humans. Reported cases of Dirofilaria infection in humans included two species, Dirofilaria immitis and Dirofilaria repens [3–14] and all were diagnosed by histopathological examinations of specimen biopsied from the infected tissues.

2. Case Report
A 46-year-old, previously healthy women presented with a subcutaneous nodule at her right thigh for 4 months. The nodule enlarged gradually. Physical examination showed a well-defined, elastic, nontender, immovable, and oval-shaped nodule about 2 centimeters in diameter at the medial side of her right thigh. Initial impression was an atheroma (Figure 1). Although the clinical characteristics of this nodule implied that it is benign in nature, excision of the nodule was performed due to its gradually enlarging size. An encapsulated nodule around 2.2 cm in diameter was resected. Unexpectedly, pathological examination revealed Dirofilaria infection (Figures 2 and 3). Chest X-ray showed no abnormal pulmonary nodules. Hemogram found no eosinophilia. As for the contact history, the patient has a 6-month-old pet dog, but has no contributory
Patients seldom seek medical help for a subcutaneous nodule other than for cosmetic concerns [3, 14]. Most subcutaneous nodules are benign [19]. Unless the nodules are situated at lymph nodes or are adjacent to major vessels such as the femoral arteries and veins, or major vessels of the neck, sonography is not routinely performed before surgical excision. By sonography, distinction between subcutaneous lipomas and epidermal cyst can be made. Subcutaneous lipomas are usually separated from the epidermis by a layer of subcutaneous tissue, while epidermal cysts usually are directly adjacent to the epidermis. The sonographic image of our patient resembled an atheroma [19] rather than a subcutaneous lipoma. However, the exact composition of the nodule could not be clearly identified solely by sonography. Histopathological examination remains the gold standard to confirm the diagnosis.

Human Dirofilaria infection, whether presenting as subcutaneous nodules, pulmonary nodules, pelvic cavity nodules, or nodules in the eye, must be diagnosed by histopathological examinations of the infected tissues. Eosinophilia is found occasionally [3]. For lung or pelvic cavity nodules, extensive survey is usually required to differentiate other diseases such as eosinophilic granuloma (histiocytosis X), non-Hodgkin’s lymphoma, sarcoidosis, tuberculosis, Wegener’s granulomatosis, primary malignant tumors, echinococcosis, histoplasmosis, hookworm infection, or Ascariasis [20]. Fortunately, our patient presented with a solitary subcutaneous nodule without eosinophilia or other organ involvement. There was no evidence of disease recurrence after complete resection of the nodule.

4. Conclusions

Dirofilariae are transmitted to humans via mosquitoes and may lodge in the lung, subcutaneous tissue, pelvic cavities, or eyes. It has been proven that canine dirofilariasis and mosquitoes capable of Dirofilaria transmission do exist in Taiwan. Experience from this case suggests that dirofilariasis should be considered as a differential diagnosis in patients presenting with subcutaneous nodular lesions, especially in those with relevant travel or contact history suggestive of Dirofilaria infection.
Conflict of Interests

The authors report no conflict of interest.

References
