Volume 10, Issue 10, October 2024,
Publish Date: 12-10-2024
Doi https://doi.org/10.55640/ijmsdh-10-10-08

International Journal of Medical Science and Dental Health (Open Access)

SUBCUTANEOUS DIROFILARIASIS: A ZOONOSIS OF SIGNIFICANCE

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ABSTRACT

Accidental inoculation of dirofilarial worm by mosquitos into humans cause a zoonotic disease called dirofilariasis. Common sites of involvement are lungs, eyes and rarely subcutaneous areas. This is a case report of a 60-year-old woman who presented with facial swelling for the past 6 months. Ultra-sonogram revealed a cyst with worm like structures inside, which was excised surgically and sent for histopathology which confirmed the diagnosis with demonstration of Dirofilaria worm. This case report aims to remind clinicians not to overlook or misdiagnose rare conditions like dirofilariasis when evaluating subcutaneous swellings.

KEYWORDS: Zoonotic diseases, subcutaneous swellings, dirofilariasis, mosquito vector.

INTRODUCTION

Human dirofilarial infection is a clinically and epidemiologically significant zoonotic disease caused by Dirofilaria repens [1]. Clinically this is a rare entity occurring due to accidental inoculation of the worm in humans rather than its natural hosts like dogs [2]. Epidemiological significance is based on the fact that emerging trend in reporting of this disease is in relation to the changing environmental conditions affecting the vector population that is mosquitos [3]. Mosquitos endemic to some parts of Asia and Europe are the vectors for transmitting Dirofilarial worms from dogs and other canines to humans [4]. We report a case of subcutaneous dirofilarial cyst in an elderly female.

CASE PRESENTATION

A 60-year-old woman presented with a small lump over the left side of her face for a duration of more than 6 months. She did not have any other comorbidities or any history of close contact with pets or animals. She had occasional pain and redness over the swelling which relieved with oral medications. On examination there was a firm non-tender swelling of size 2×1 centimetre over the left side of the

face [Figure 1]. The swelling was non-compressible and with restricted mobility. No erythema or local rise of temperature was noted.

Figure 1 *(swelling of size 2×1 centimetre over the left side of the face.)*

Ultra-sonography revealed a well-defined cystic lesion measuring 9.2×6.4×8.8 millimetres in the subcutaneous plane of the left cheek containing a serpiginous tubular structure with parallel echogenic stripes suggesting a parasitic cyst [Figure 2].

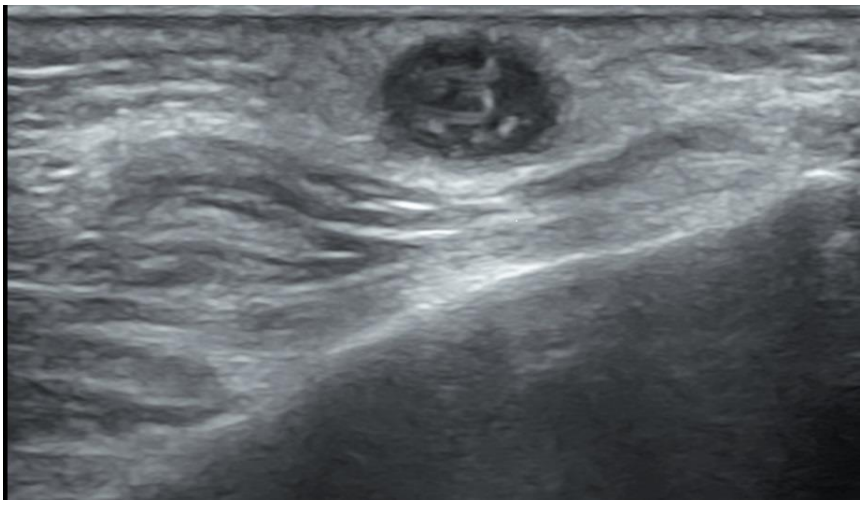

Figure 2 *(Ultra sonogram showing a well-defined cystic lesion measuring 9.2×6.4×8.8 millimetres in the subcutaneous plane of the left cheek with serpiginous tubular structure with parallel echogenic stripes.)*

Heamogram and serum IgE levels were normal. A thick-walled cyst was excised under local anaesthesia [Figure 3]. Histopathology evaluation suggested a cyst of size 1.3×1.2×0.7 centimetres lined by granulation tissue containing sections of parasite with thick hyalinised cuticle and dense inflammatory infiltrates formed by multinucleated giant cells, lymphocytes, plasma cells, neutrophils and eosinophils [Figure 4]. Thus, a diagnosis of subcutaneous dirofilarial infection cyst was confirmed. Patient was

treated with oral anti-parasitic medications (Albendazole and Diethylcarbamazine) and showed good recovery following excision.

Figure 3 *(cystic swelling excised surgically under local anaesthesia.)*

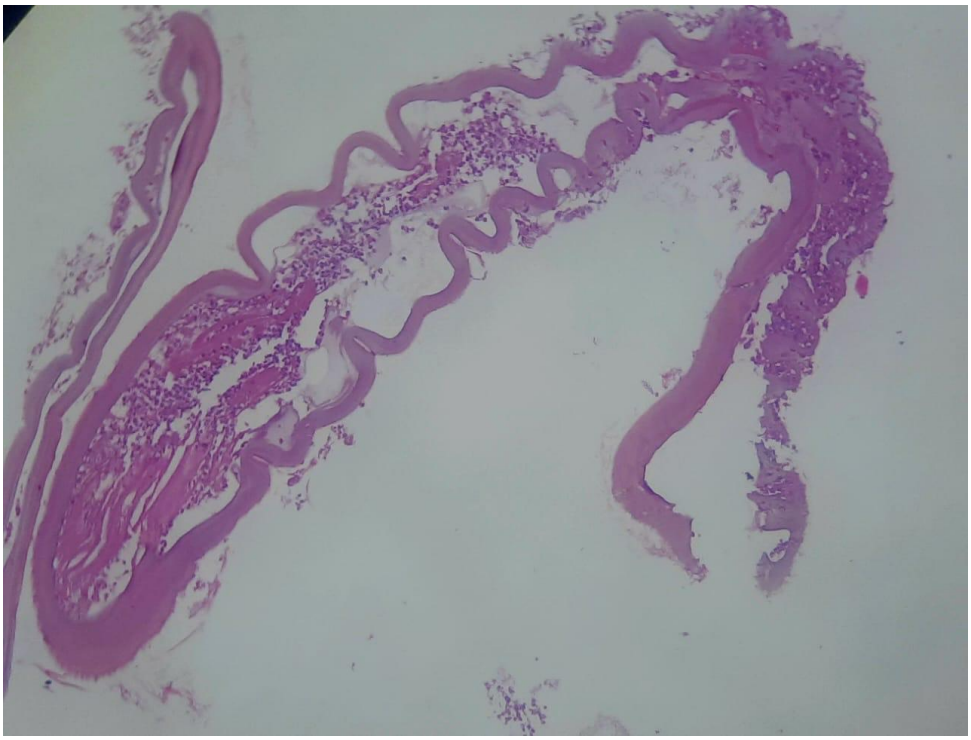

Figure 5 *(histopathological examination showing parasite with thick hyalinised cuticle and dense inflammatory infiltrates formed by multinucleated giant cells, lymphocytes, plasma cells, neutrophils and eosinophils.)*

DISCUSSION

Zoonotic filariasis in humans is caused mainly by the genus Dirofilaria [5]. Out of many different species of this worm only a few are identified to cause human infections. Dirofilaria repens has been identified

to be the causative agent in most of the cases in Europe, Asia and Africa. South India and Sri Lanka are considered to be a focus of dirofilarial infection in Indian subcontinent [6]. Mosquitos of family Culicidae are the main vectors involved in picking up of the worm in the first larval stage from blood stream of natural hosts like dogs, followed by maturation inside mosquitos and are released in the third stage to humans. Humans are both accidental and end-stage hosts for the worms and they tend to mature and cause microfilaria very rarely [4]. Increase in incidence and geological distribution of this disease is a by-product of the changing environmental conditions affecting the vector population [3].

Most common sites of dirofilarial deposition in humans are eyes and lungs. Ocular lesions are reported more owing to their early symptoms and direct noticeability. Lung involvement may cause symptoms like cough, breathing difficulty, chest pain or haemoptysis [7]. Subcutaneous dirofilariasis is a comparatively rare entity which can present over any part of the body as migratory swelling with or without pain. These may mimic benign swellings like lipoma or infected cysts [3].

Diagnosis of subcutaneous dirofilariasis is made with certainty only after surgical removal and histopathology evaluation. Blood eosinophila and high IgE levels are not always present. Species and sex identification of worm is done by morphological evaluation of the worm under microscope. DNA PCR is the gold standard for confirming species [8]. Ultrasonography usually shows linear structures with striations indicating worms [4]. Surgical excision of the dirofilarial cyst or even extraction of the worm is curative treatment option. Anti-helminthic medications play little role as microfilaremia is very rare [9]. Ivermectin and Diethylcarbamazine are the chemotherapeutic agents of choice, especially in areas where prevalence of vector is high. Preventive measures to avoid mosquito bite and eradication of vectors along with combination chemotherapy for dogs to eradicate dirofilarial infection can be considered to prevent potential public health issues [4]. Climate change, globalisation, urbanisation and associated changing trends in utilisation of lands affect the geographical distribution of vector population which in turn causes the redistribution of disease to newer areas [10].

CONCLUSION

The evolution of vector borne diseases due to changing environmental conditions is a significant topic in the current scenario. Considering the redistribution of these diseases, clinicians should consider the rare but possible conditions like dirofilarial infections when evaluating a subcutaneous swelling. This is a condition which can be treated very easily and effectively once diagnosed.

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