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Case Report

Human Dirofilariasis with Diverse Site Presentations

Dr Rosna Ibrahim[1], Dr Anwar Rasheed[2], Dr Sahni D.K.[3], Dr Hiran Ramanan[4], Dr Nidhin S.B.[5]

[1]Postgraduate, Department of ENT, Travancore Medical College, Kollam, Kerala, India.
[2]Professor & HOD, Department of ENT, Travancore Medical College, Kollam, Kerala, India.
[3]Associate Professor, Department of ENT, Travancore Medical College, Kollam, Kerala, India.
[4]Associate Professor, Department of ENT, Travancore Medical College, Kollam, Kerala, India.
[4]Assistant Professor, Department of ENT, Travancore Medical College, Kollam, Kerala, India.

Corresponding Author:

Dr Rosna Ibrahim
Postgraduate, Department of ENT, Travancore Medical College, Kollam, Kerala, India.

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ABSTRACT

A rare infection called human dirofilariasis is brought on by filarial worms belonging to the genus Dirofilaria. Dirofilaria repens and Dirofilaria immitis are the two main aberrant (accidental) hosts that can infect humans. Here, we describe four instances of subcutaneous dirofilariasis in humans. Here, we report four cases of human subcutaneous dirofilariasis, each with a different site of incidence.

Keywords: *Human Dirofilariasis, Sites.*

BACKGROUND

Human dirofilariasis is an emerging zoonotic infection caused by Dirofilaria repens, a filarial helminth transmitted by Anopheles, Aedes and Culex mosquitoes. The parasite commonly infects domesticated animals, especially dogs, while humans serve as accidental hosts. In humans, the infection often manifests as localized inflammation, primarily in subcutaneous or ocular tissues, and presents clinically as solitary nodules, particularly in the head and neck region. This presentation aims to analyse four cases of human Dirofilariasis encountered in our institution, highlighting the varied clinical presentations, diagnostic challenges, and management strategies to enhance awareness among clinicians in both endemic and non-endemic areas. The following is a narrative of the four cases.

Case 1

A 63-year-old female presented with swelling in the left upper aspect of the neck for the past 2 months. Local examination revealed a 2 cm x 1 cm swelling in the left upper aspect of the neck at the level of insertion of the sternocleidomastoid muscle. It was non-tender, firm in consistency and mobile. Further analysis by Ultrasonography showed a 1.3x0.5 cm hypoechoic lesion in the sternomastoid muscle. There was an internal tubular serpiginous structure with active movements, suggesting a microfilarial parasite. The case was managed with complete surgical excision. Histopathological examination showed an inflammatory lesion with granulation tissue formation and a degenerate cyst wall. Microbiology examination confirmed Dirofilaria repens. The follow-up was uneventful with no recurrence.

Figure 1

Case 2

A 52-year-old female presented with a painless swelling below the right eye present for 3 months. Local examination revealed a 1cm x 0.5cm sized, non-tender cystic lesion over the right medial canthus. Ultrasonography showed a hypo to anechoic lesion in the subcutaneous plane of right medial canthus with an internal tubular sepinginous structure with parallel echogenic walls and internal echoes suggestive of dirofilarias. The patient underwent surgical excision of the cyst and multiple worms were extracted from the cyst. Histopathology showed a fibromuscular cyst wall lined by granulation tissue with eosinophilic sclerotic bodies within the lumen. The cyst wall also showed degenerated parts of the worm. Microbiology examination confirmed Dirofilaria repens.

Figure 2

Case 3

A 21-year-old male presented with right cheek swelling present for 3 weeks. Local examination showed a 1 cm x 1 cm size, non-tender, cystic lesion in the outer aspect of the right cheek. Ultrasonography showed a hypoechoic lesion with internal cystic changes with thin structures with parallel echogenic borders inside the cystic cavity. The patient underwent surgical excision. Histopathology of the specimen revealed fibrocollagenous tissue with chronic inflammatory infiltrate with worm-like structures with cuticle and longitudinal ridges. Microbiology confirmed Dirofilaria repens. The follow up was uneventful.

Figure 3

Case 4

A 61-year-old female with right cheek swelling present for 1 month. Local examination showed a 12 mm x 8 mm sized, non-tender, firm-consistency intraoral swelling. Ultrasonography showed a hypoechoic collection in the right masseter muscle. The lesion was excised and the specimen subjected to a histopathology examination which showed a degenerate worm with a hyalinized cuticle. There was fibrosis and thickening of the degenerate cyst wall, suggesting Dirofilaria, which was confirmed by microbiological tests.

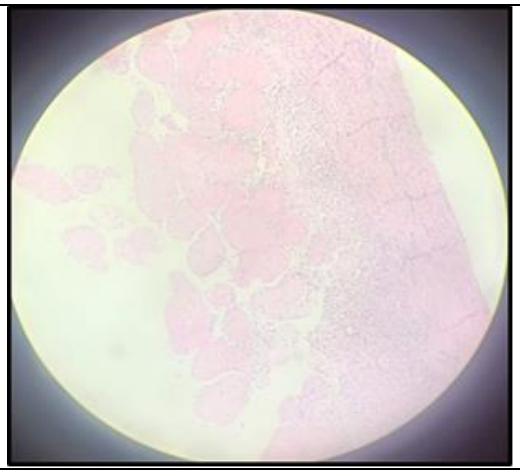

Figure 4

10As evident, among the four patients, three were females in their 50s and one was a male in his 20s. All reported a history of exposure to domestic dogs. Clinical presentations varied, with two patients exhibiting subcutaneous swelling in the buccal mucosa, one presenting with periorbital swelling, and another with a neck mass. Ultrasonography was utilized for provisional diagnosis and revealed characteristic internal tubular serpiginous structures with active movements suggestive of parasitic infection. Definitive diagnosis was established by histopathological and microbiological examination of excised tissues, confirming the presence of Dirofilaria species.

DISCUSSION

A rare infection called human dirofilariasis is brought on by filarial worms belonging to the genus Dirofilaria. Dirofilaria repens and Dirofilaria immitis are the two main aberrant (accidental) hosts that can infect humans. There are a few instances of subcutaneous dirofilariasis, although ocular dirofilariasis accounts for the majority of occurrences in India. Four cases of human subcutaneous dirofilariasis with different sites of incidence are reported here.

The genus Dirofilaria belongs to the Onchocercidae family within the Filarioidea superfamily. Different species that naturally parasitise dogs, cats, foxes, and wild mammals belong to the genus Dirofilaria. Dirofilariasis is the term for the infection that this genus causes in humans. It is a zoonotic infection that affects people all around the world.[1] Humans can unintentionally contract Dirofilaria from mosquito bites that carry infectious larvae. In human tissue, dirofilaria cannot fully develop and perishes before generating microfilaria.[2]

Human dirofilariasis is thought to be an uncommon zoonotic infection, but cases have been reported more frequently in recent years, raising the possibility that it is an emerging zoonosis in many regions of the world. With endemic foci in

Eastern and Southern Europe, Asia Minor, Central Asia, and Sri Lanka, D. repens is the most commonly reported dirofilariasis.[3] In Asia, D. repens is the primary cause of subcutaneous dirofilariasis.

Even though there are sporadic reports of Dirofilaria cases in India, the number of cases is steadily rising. Although D. repens infections account for the majority of cases reported from India, there have also been reports of D. immitis and D. tenuis infections. The majority of D. repens cases have been reported from the southern region of India, which is geographically near to Sri Lanka. Although Kerala state in India seems to be the focus for human dirofilariasis, few cases have also been reported from the states of Karnataka, Orissa,[4] and Maharashtra.[5]

Usually, human dirofilariasis presents as either lung parenchyma disease or subcutaneous nodules. Patients with D. repens infections typically have a subcutaneous lump in the affected location, which is typically the face and conjunctiva of the eye, but it can also occur in the chest wall, upper arms, thighs, abdomen wall, and male genitalia. Typically, patients arrive with a solitary migrating nodule that may or may not be painful. Periorbital, orbital, subconjunctival, or subtenon infections are the most common types of ocular involvement.[6] Human pulmonary dirofilariasis has been linked to human D. immitis infection, which is typically asymptomatic. The symptoms include fever, pleural effusion, chest discomfort, and cough.[7] The majority of human dirofilariasis cases that have been reported in India have involved eye infections. There are very few documented examples of subcutaneous dirofilariasis.

Human dirofilariasis is clinically significant because these subcutaneous lesions may be mistakenly diagnosed as malignant tumours at first, necessitating invasive testing and surgery before the proper diagnosis is confirmed.[8] The fully developed adult worm is used to identify Dirofilaria worms.[9] Both diagnosis and treatment are aided by biopsy and surgical worm removal. Chemotherapy is not necessary since microfilaremia is so uncommon. Since several zoonotic Dirofilaria species have been described that share morphologic characteristics with D. repens, morphological examination is limited in its ability to identify the precise species.[10] According to the majority of research published, morphological characteristics are used for identification in India. DNA analysis based on polymerase chain reaction can accomplish precise identification, which may not always be feasible in clinical laboratories due to the need for numerous specialised probes for a particular diagnosis.[11,12] Since live, moving worms may be seen in real time, high-resolution ultrasound is the preferred imaging technique for the investigations.

Mosquito density, a warm climate with a long mosquito breeding season, outdoor human activity, and the prevalence of microfilaremic canines are the main risk factors for human infections.[11] The incidence of human dirofilariasis is quite low in Assam despite the presence of all these environmental conditions. This can be due to a number of causes, including underdiagnosis, misdiagnosis, diagnostic limitations, and underreporting.

Numerous studies have demonstrated that medications like doxycycline, ivermectin, and diethylcarbamazine (2 mg per kg t.i.d.) can effectively treat dirofilariasis in addition to surgical excision. [10] However, it is important to remember that almost all cases are only found when histopathologic sections of biopsy or excised material are analysed.[13]

CONCLUSION

These instances highlight how crucial it is to take dirofilariasis into account when making a differential diagnosis for subcutaneous nodules, especially in those who have previously been exposed to dogs. Awareness of this condition, coupled with appropriate imaging and histopathological evaluation, is crucial for timely diagnosis and management, especially in regions where the disease is not commonly reported.

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