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AN UNEXPECTED GUEST: HUMAN OTOACARIASIS IN A CHILD WITHOUT ANIMAL CONTACT

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ABSTRACT
Background: Human otoacariasis is an uncommon but clinically important form of animate foreign body infestation of the external auditory canal. It is usually associated with exposure to animals, vegetation, or rural environments. This report describes an unusual pediatric case in which no direct animal contact was identified.
Case presentation: A 12-year-old girl presented with a 2-day history of left-sided otalgia, aural pruritus, and a persistent crawling sensation. Video-otoscopy revealed a live dark-brown hard tick attached to the posterior wall of the external auditory canal with localized erythema, edema, and granular debris on the canal floor and tympanic membrane. The child had no previous otologic disease, no pet ownership, and no recalled contact with domestic or wild animals.
Outcome: A 2% lidocaine solution was instilled for chemical immobilization. The tick was then removed intact under video-endoscopic guidance with micro-alligator forceps, followed by gentle microsuction, local antiseptic irrigation, and topical corticosteroid-antibiotic therapy. The attachment site showed a focal hyperemic feeding lesion, but the tympanic membrane remained intact. At 48-hour review, pain and pruritus had resolved, edema had subsided, and no neurological or systemic sequelae were observed.
Conclusion: This case shows that pediatric otoacariasis can occur even without direct animal contact. Indirect environmental exposure through household or peridomestic substrates should be considered. Safe management depends on early visualization, chemical immobilization before extraction, complete removal, local wound care, and short-term follow-up. The case supports a broader exposure history and a cautious extraction sequence for children with animate aural foreign bodies.

KEYWORDS: Otoacariasis; Rhipicephalus; Ixodidae; pediatric otolaryngology; external auditory canal; tick infestation; chemical immobilization.

INTRODUCTION

Otoacariasis is infestation of the external auditory canal by ticks or mites. In routine otolaryngology, foreign bodies in the ear are usually inert objects or incidental insects. Tick-related otoacariasis is different because the parasite is hematophagous and attaches to living tissue. The tick does not merely enter the canal; it anchors to the canal wall or, less commonly, to the tympanic membrane, and feeds until it is removed or completes its blood meal. This biological behavior explains why the condition can cause intense pain, pruritus, local inflammation, bleeding, and anxiety in the patient.
The diagnosis may be missed when clinicians rely only on history. Children may describe pain, itching, or a vague sensation of movement but may not know when or where exposure occurred. Parents may also deny animal contact because the household does not keep pets, even though the child may have encountered ticks in school spaces, gardens, temporary lodgings, shared transport, or houses visited briefly. For this reason, the physical finding is more important than the initial exposure assumption. A careful ear examination is especially necessary when symptoms are unilateral, acute, and associated with a moving or crawling sensation.
The condition has been reported in Sri Lanka, where studies of human otoacariasis have described tick species diversity, seasonality, geographic distribution, and socio-ecological risk factors [1,3]. These studies are clinically relevant because they show that otoacariasis is not only an unusual ear complaint but also a small expression of a wider ectoparasite ecology. Sri Lankan studies on dogs, livestock, reptiles, birds, and small mammals have documented several animal hosts that can maintain tick or mite populations in human environments [4,9,16-19,21,34]. Therefore, a case in a child must be interpreted through both clinical and environmental lenses.
Ticks belong to the order Ixodida and include hard ticks of the family Ixodidae, which possess a firm dorsal scutum and specialized mouthparts for attachment and feeding [23]. The genus Rhipicephalus is especially relevant in domestic settings because the brown dog tick is closely associated with dogs and can complete parts of its life cycle in human dwellings or peridomestic areas [4]. However, the presence of a dog in the child's home is not always necessary for exposure. Ticks may be introduced through clothing, visitors, school environments, stray animals, rodents, birds, or contaminated household and peridomestic substrates.

The present study reports a case of human otoacariasis in a 12-year-old girl without pet ownership or recognized contact with domestic or wild animals. The case is important because the absence of a typical exposure history could delay diagnosis. It also illustrates practical procedural issues: the value of video-otoscopy, the need to immobilize the parasite before extraction, and the importance of inspecting the attachment site after removal. The study aims to place the case within the available literature on otoacariasis, ectoparasite diversity, environmental exposure, tick biology, and post-extraction clinical surveillance.

LITERATURE REVIEW

Clinical scope of otoacariasis

Human otoacariasis is a localized ectoparasitic infestation of the ear canal. Sri Lankan research has provided some of the clearest regional evidence on this condition, including the distribution of tick species associated with human cases and the socio-ecological factors linked to infestation [1]. A later study in two climatically diverse districts further emphasized seasonality, case presentation, and risk variation across local settings [3]. These studies show that otoacariasis is not simply a random foreign body event. It reflects the meeting point between human behavior, animal reservoirs, vector ecology, climate, and clinical access.

The clinical picture is usually dominated by acute otalgia, pruritus, a crawling or moving sensation, and sometimes obstruction or discharge. When the parasite is attached, the pain can be more severe than that caused by a freely mobile insect because the tick penetrates the epithelium and remains fixed. Intra-aural tick bite has also been associated with more serious complications. A Sri Lankan series described unilateral facial nerve palsy in patients with intra-aural tick bite and raised the possibility of rickettsial involvement [15]. Such reports support careful follow-up even when the local procedure appears successful.

Clinical recognition in children

Pediatric otoacariasis deserves separate attention because children may not describe symptoms in precise clinical language. They may report ear pain, fear, crying, inability to sleep, scratching, or discomfort during chewing rather than a clear history of an arthropod entering the ear. The ear canal is also smaller, and examination may be limited by movement or distress. These factors increase the importance of calm positioning, good illumination, magnification, and avoidance of blind instrumentation. In studies of human otoacariasis, careful case notes and direct identification of the organism have been essential for linking symptoms to tick attachment rather than to ordinary otitis externa [1,3].

Ectoparasite diversity and differential diagnosis

Otoacariasis should be considered within the broader field of ectoparasite exposure. Ticks, mites, lice, and fleas all belong to different arthropod groups and have different host relationships. General medical entomology texts describe lice as wingless ectoparasites adapted to close host contact, fleas as laterally compressed jumping insects with veterinary and public health relevance, mites as a diverse acarine group that includes free-living, parasitic, and medically important forms, and ticks as blood-feeding acari with complex life cycles [10-12,22,23]. A correct clinical diagnosis therefore begins with direct visualization rather than assumption based on symptoms alone.

Regional reports confirm that Sri Lanka has a wide ectoparasite fauna. An annotated checklist has documented chigger mites from multiple families in Sri Lanka [2]. Nest-dwelling mites have been recorded from selected common bird species [16], and mites have also been investigated in dogs in Colombo District [20]. House dust mites are relevant to indoor ecology, although they are not the same as ear-attached ticks [27]. Chewing lice have a broader global biological literature [6], and lice have also been documented in captive Asian elephants in Sri Lanka [29]. These studies are not all about otoacariasis, but they demonstrate that human dwellings and nearby animal habitats can support many ectoparasite groups.

The differential diagnosis also includes non-ectoparasitic ear conditions. Acute otitis externa, impacted debris, canal trauma, furunculosis, otomycosis, temporomandibular joint pain, and middle-ear disease can all produce otalgia. However, the combination of a crawling sensation with localized canal inflammation should prompt the clinician to search for an animate foreign body. Ticks can be overlooked when they are partly covered by debris, when the canal is narrow, or when the organism is mistaken for a blood clot or dark wax. Video-otoscopy reduces this risk because it enlarges the field and permits documentation.

Animal hosts and environmental reservoirs

The literature on animal-associated ticks is central to understanding indirect exposure. Ticks have been reported from goats in Sri Lanka, with host records that show the importance of livestock in maintaining tick populations [9]. Epidemiological work on farm animals in selected Sri Lankan areas has also described tick infestation patterns in domestic animals [17]. Additional Sri Lankan research has documented ticks on reptiles and on wild and domestic animals as well as humans, expanding the recognized host range [18,19]. Parasites of house geckos in Central Sri Lanka and new ectoparasite records from small mammals further show that non-domestic or overlooked animals may contribute to local ectoparasite ecology [21,34].

Comparable evidence from other countries supports the same ecological principle. In the Chittagong Hill Tracts of Bangladesh, ectoparasites were collected from livestock, dogs, and wild rodents [13]. In Pakistan, tick infestation in ruminants

varied across agro-ecological zones and was associated with farm-level risk factors [26]. A study from South Africa compared tick species in controlled and control-free areas on a game ranch, illustrating how management practices can influence tick presence [28]. Together, these studies show that tick exposure is shaped by animals, landscape, husbandry, and local control measures.

Rhipicephalus and domestic transmission

Rhipicephalus is clinically important because some species are strongly associated with dogs and domestic spaces. Sri Lankan work on dog tick diversity and the life cycle of the brown dog tick, Rhipicephalus sanguineus, under laboratory conditions is relevant to the present case because it confirms the domestic importance of this genus [4]. Dog mite infestations reported in Colombo District further suggest that companion animals may carry ectoparasites in urban or suburban settings [20]. Nevertheless, a child can be exposed without owning a pet. Stray dogs, shared spaces, school surroundings, visitors, or contaminated fabrics may act as indirect links between animal-associated tick populations and a household.

This point is especially important in clinical history taking. A negative answer to the question 'Do you have pets?' does not rule out exposure. A more useful history includes recent ground play, travel through vegetation, contact with stray animals, time spent in houses with pets, sleeping on mats or floors, storage of clothing outdoors, and evidence of birds or rodents around the home. Otoacariasis studies in Sri Lanka have linked cases to socio-ecological risk factors and seasonal conditions [1,3]. The present case is consistent with that broader view even though direct animal contact was denied.

The host range evidence is also relevant to family counseling. Families often interpret a tick in a child's ear as proof of direct contact with a dog or farm animal. The literature suggests a more cautious explanation. Multiple host groups can support ectoparasites, and local abundance may depend on season, animal movement, vegetation, climate, and control measures [1,3,13,17,19,26]. This means that prevention cannot rely only on avoiding one animal. It should include attention to household cleaning, play surfaces, and animal populations around the home.

Urban and peri-urban context

Urban residence does not eliminate ectoparasite risk. Cities include gardens, drains, vacant land, animal shelters, schools, markets, and houses where pets or stray animals may pass. Peri-urban areas are even more complex because dense human settlement may overlap with agriculture, livestock, and disturbed vegetation. Work comparing urban and peri-urban agriculture has shown that these spaces differ in their functions, ecological relationships, and links with food systems [24]. Such differences matter because tick exposure is affected by where humans, animals, and soil meet.

Sri Lankan local descriptions, including administrative overviews such as that of Udunuwara, also remind clinicians that communities often include mixed residential, agricultural, and natural features rather than a simple urban-rural divide [8]. In such settings, a child may live in a household that appears urban but still pass through peridomestic tick habitats. School children may also encounter ectoparasites through shared play surfaces, public transport, and community spaces. Research on ectoparasitic and dermatological infections among school children in Gampaha District supports the wider point that child health can be influenced by environmental and behavioral exposure outside the home [14].

Tick biology and clinical risk

Hard ticks have specialized structures that allow attachment and feeding. The basic biology of ticks, including their life stages, host-seeking behavior, and feeding, is described in medical and veterinary entomology sources [23]. Tick-borne disease ecology further shows that the risk of transmission is shaped by interactions among ticks, vertebrate hosts, pathogens, climate, and human behavior [25]. Clinical veterinary literature also emphasizes that ticks can transmit pathogens and cause local and systemic effects in animals, while human clinical practice must remain attentive to possible systemic illness after tick exposure [30].

Domestic exposure is further complicated by the life cycle of ticks. A tick attached to a child at the time of presentation may not have reached the ear directly from an animal. It may have been on clothing, bedding, furniture, or the floor before moving to the canal. The brown dog tick is of particular interest because of its association with dogs and human dwellings [4]. In communities where stray dogs move between houses, schools, and public places, a household without pets may still be within a domestic tick ecology.

The clinical concern in otoacariasis is therefore twofold. First, the attached tick creates a local wound in a sensitive canal. Retained mouthparts, bleeding, edema, and secondary infection are possible if removal is incomplete or traumatic. Second, some ticks can carry pathogens. Surveillance studies of Lyme disease in Canada show how tick and animal monitoring has been used over time to understand changing disease patterns [7]. In Sri Lanka, massive tick bites have been reported in association with spotted fever rickettsial infection [31]. Although most single intra-aural bites will not lead to systemic disease, the patient should be advised to seek care for fever, rash, malaise, facial weakness, or worsening ear symptoms.

Public health relevance

Ticks also have economic and veterinary importance. Reports on the economic losses and health impact of tick bites in farm, field, and dairy animals emphasize that tick control is not only a clinical issue but also an agricultural and household concern [32,33]. When animal infestations are heavy, the probability of human contact with ticks may rise. This does not mean that

every human case comes from livestock or pets, but it supports a One Health approach in which clinicians, families, veterinarians, and public health workers recognize links among animal health, household environments, and human disease.
The available literature also suggests under-recognition. Mite-borne diseases in Sri Lanka have been described as a hidden iceberg of vector-borne diseases, indicating that clinically important ectoparasite-related conditions may receive less attention than their actual burden warrants [5]. Otoacariasis is likely affected by the same problem. Some cases may be treated as simple ear foreign bodies without species documentation, while others may resolve after removal and never enter surveillance data. Better reporting of pediatric cases, especially those without clear animal contact, would improve understanding of transmission routes and prevention.
The literature on ectoparasites is broader and stronger than the literature on human ear infestation alone. This creates a gap between entomological knowledge and routine clinical reporting. Tick species may be documented in animals, but human cases may be reported only as foreign bodies. Similarly, a child may recover after extraction, but the specimen may not be preserved or identified. A more consistent case-reporting format would include age, sex, residence type, exposure history, otoscopic location, parasite morphology, extraction method, condition of the tympanic membrane, local treatment, and follow-up outcome. Such reporting would allow comparisons across rural, urban, and peri-urban settings.
Overall, the literature supports three points that are relevant to the present case. First, human otoacariasis is uncommon but well documented in Sri Lanka, with seasonality and risk factors that vary by place [1,3]. Second, ectoparasites are maintained by a wide set of animal hosts and environmental conditions, including dogs, livestock, reptiles, birds, rodents, and indoor or peri-domestic substrates [4,9,13,16-21,27,34]. Third, ticks carry local and systemic clinical concerns because of their feeding mechanism and their role in pathogen ecology [23,25,30,31]. These points explain why a child without direct animal contact can still present with tick-related otoacariasis. This evidence base is sufficient to support cautious clinical reasoning, although it does not allow exact estimation of risk for any single child.

CASE PRESENTATION

Clinical history and presentation

A 12-year-old female patient presented to the Otorhinolaryngology clinic with a 2-day history of progressive left-sided otalgia and intense aural pruritus. The pain was intermittent and sharp, with a throbbing component radiating to the ipsilateral mandibular angle. It was aggravated by mastication and lateral jaw movement, and the patient reported some limitation in mouth opening because jaw movement increased the ear pain. She also described a persistent crawling sensation inside the left ear. She denied hearing loss, tinnitus, vertigo, otorrhea, fever, malaise, headache, rash, or facial weakness.
The medical history was unremarkable. There was no previous otologic disease, ear trauma, ear surgery, chronic otitis externa, or known dermatological disease affecting the ear canal. The patient had not inserted any object into the ear and had not used ear drops before presentation. The family reported no pet ownership. They also denied direct contact with domestic animals, livestock, or wild animals during the weeks preceding symptom onset. This negative exposure history initially made a tick bite less expected, but the symptom of crawling inside the canal suggested an animate foreign body and justified careful video-otoscopic examination.
The history was reviewed with attention to indirect exposure. No clear event was identified. The child had continued normal daily activities before symptom onset. The family could not recall a recent visit to a farm, animal shelter, forested area, or known tick-infested environment. They also did not report similar symptoms among family members. Because a tick can be carried passively on clothing or introduced through peridomestic spaces, the absence of a definite exposure source was recorded as part of the clinical significance of the case rather than as evidence against the diagnosis.
During history taking, the child's description of mandibular-angle radiation was considered in relation to the sensory supply of the external auditory canal and the effect of jaw movement on the inflamed canal wall. The absence of vertigo, tinnitus, otorrhea, fever, and hearing loss reduced the likelihood of inner-ear disease, acute suppurative otitis media, or systemic infection at presentation. Nevertheless, the severity of pain during mastication showed that the local lesion was clinically significant and required prompt treatment rather than watchful waiting.

Physical examination

On examination, the patient was afebrile and in no acute distress. General inspection did not reveal rash, lymphadenopathy, facial asymmetry, or neurological deficit. Examination of the right ear was unremarkable. There was no tenderness over the mastoid region. The left auricle was normal in appearance. Manipulation of the tragus and auricle caused mild discomfort, consistent with inflammation of the external auditory canal rather than middle-ear disease.
Video-otoscopy of the left ear revealed a live dark-brown arthropod firmly attached to the posterior wall of the external auditory canal. The attachment point was located at approximately the 10 o'clock position. The organism was compatible with a hard tick. The surrounding canal skin was erythematous and edematous, and the canal floor contained abundant dark granular debris consistent with tick excreta. Some granular debris was also visible on the tympanic membrane. Despite partial obstruction by the parasite, debris, and soft tissue swelling, the tympanic membrane could be seen beyond the lesion and appeared intact. No middle-ear effusion, perforation, or active otorrhea was identified.
The working diagnosis was left-sided human otoacariasis caused by an attached hard tick, clinically compatible with Rhipicephalus sp. The differential diagnosis included other animate ear foreign bodies, acute otitis externa, traumatic canal abrasion, and referred otalgia from temporomandibular irritation. Direct visualization established the diagnosis and also

guided the procedural plan. Because the tick was attached to thin canal skin and the tympanic membrane was nearby, blind probing or immediate forceful traction was avoided.
The visualization of granular debris on both the canal floor and tympanic membrane was important. It showed that the canal was not only occupied by the living parasite but also contaminated by material deposited during attachment and feeding. This finding supported the decision to clean the canal after extraction rather than simply remove the tick. At the same time, the tympanic membrane was inspected before the procedure so that irrigation and suction could be performed cautiously.

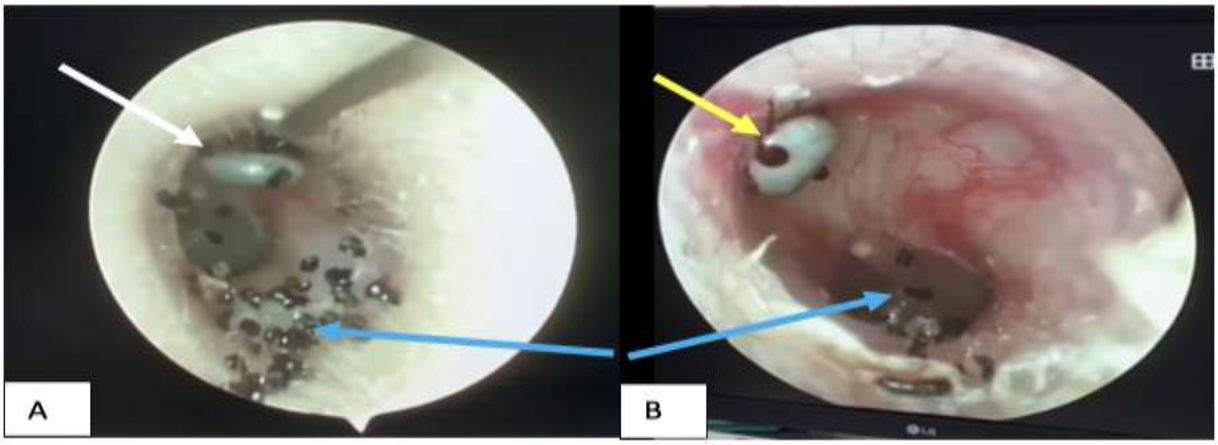

Figure 1. Video-otoscopic views of the left external auditory canal: (A) A live tick (white arrow) is attached to the posterior canal wall skin, surrounded by localized skin erythema (yellow arrowhead). Dark granular debris consistent with tick excreta is deposited on the tympanic membrane (blue arrowhead) and canal floor (blue arrow). (B) The extracted specimen was identified as an intact hard tick, with the hypostome preserved in its entirety.

Intervention and management
The patient was placed in the right lateral decubitus position to optimize access to the left external auditory canal. This position allowed stable visualization and reduced the risk of sudden movement during extraction. A 2% lidocaine solution was instilled into the canal and allowed to dwell for 10 minutes. The purpose of this step was chemical immobilization of the tick. Immobilization was chosen because mechanical traction on a live attached tick may increase movement, deepen attachment, tear the canal skin, or leave mouthparts embedded in the tissue.
After immobilization was confirmed, loose debris was removed with gentle low-pressure microsuction. The canal was not aggressively curetted. Under video-endoscopic guidance, the tick was grasped with micro-alligator forceps as close as possible to the attachment site. Controlled traction was applied along the axis of attachment until the tick disengaged from the canal wall. The specimen was removed intact. The hypostome and body were preserved, and no visible fragment remained in the canal.
Post-extraction inspection showed a focal hyperemic feeding lesion at the attachment site with surrounding petechiae. The appearance was consistent with local hematophagous feeding activity and mild traumatic inflammation from attachment. There was no active bleeding after removal. The tympanic membrane remained intact, and no residual moving organism was seen. The canal was subsequently irrigated with dilute povidone-iodine solution as local antiseptic care. The aim was to reduce secondary bacterial contamination after removal of the parasite and granular debris.
Throughout the procedure, care was taken to avoid pushing the tick deeper into the canal. The instrument tips were advanced slowly under direct vision. The forceps were positioned near the anterior body and attachment point rather than at the swollen posterior body. This approach reduced the chance of crushing the specimen or leaving retained mouthparts. The patient remained stable during the procedure, and the position provided adequate access without the need for sedation.

Follow-up and outcome
A corticosteroid-antibiotic ointment-impregnated ear wick was inserted into the left external auditory canal to provide topical anti-inflammatory and antimicrobial therapy to the attachment site. The patient reported immediate relief of the crawling sensation after extraction and marked reduction of otalgia and referred mandibular pain. The family was advised to monitor for fever, rash, worsening ear pain, discharge, vertigo, facial weakness, or persistent swelling. They were also advised to examine household and play environments for possible indirect exposure sources, including bedding, carpets, floor mats, areas used for ground-level play, and places where stray animals or birds might have contact.
At the 48-hour follow-up visit, the patient was asymptomatic. The ear wick was removed. The external auditory canal edema had completely subsided, and the canal skin appeared healthy with no residual erythema at the previous attachment site. The tympanic membrane remained intact and clean. No hearing complaint, tinnitus, vertigo, otorrhea, fever, rash, lymphadenopathy, or neurological sign was observed. No systemic complication was identified during early follow-up. The

clinical course supported complete local recovery after chemical immobilization, intact extraction, debridement of debris, and topical care.

No systemic investigations were ordered at the initial visit because the child was afebrile, clinically stable, and had no rash, lymphadenopathy, neurological deficit, or constitutional symptom. The decision was to manage the local problem first and to use follow-up as a safety check. This approach avoided unnecessary testing while still recognizing the possible systemic implications of tick exposure.

The specimen was kept intact after removal for clinical documentation. The preserved hypostome was important because it confirmed that the attachment apparatus had not been left in the canal. This point was explained to the family in simple language, together with the reason for the short follow-up visit. The explanation helped reduce anxiety and supported adherence to post-procedure advice.

Clinical significance of the case record

The case record was kept focused on observable facts. The tick was described at family and genus-compatible level rather than by unsupported species-level identification. The absence of animal contact was recorded because it affected clinical interpretation. The 48-hour follow-up was included because it confirmed rapid local recovery and absence of early neurological or systemic complications. These details make the case useful for comparison with future pediatric reports.

The final diagnosis was uncomplicated left otoacariasis with localized canal inflammation and intact tympanic membrane. No recurrence was reported during the early review period. The absence of residual symptoms after 48 hours was taken as evidence that the parasite and associated debris had been cleared adequately. The family was advised to return if any delayed pain, discharge, fever, rash, or facial weakness occurred.

DISCUSSION

Clinical interpretation of the case

This case is clinically relevant because it combines a typical symptom pattern with an atypical exposure history. The symptoms of acute unilateral otalgia, itching, and crawling sensation are consistent with an animate foreign body and with reported human otoacariasis in Sri Lanka [1,3]. However, the child had no pet ownership and no recalled contact with domestic or wild animals. This feature should not be viewed as contradictory. Rather, it shows that the exposure history in pediatric otoacariasis must include indirect environmental pathways.

The diagnosis was made because video-otoscopy was performed early. This is an important practical point. If the case had been treated empirically as otitis externa without visualization, the attached tick could have remained in place, continuing to feed and provoking more inflammation. The external auditory canal is narrow, sensitive, and close to the tympanic membrane. In a child, pain and fear can also make examination difficult. Video-otoscopy allowed the clinician to identify the parasite, document the canal condition, assess the tympanic membrane, and plan controlled extraction.

The case also illustrates how a common symptom can have an uncommon cause. Ear pain in children is often attributed to otitis media, otitis externa, wax, or trauma. In contrast, tick-related otoacariasis is seldom considered unless there is a rural or animal exposure history. The present case shows that a symptom-led approach is safer than an exposure-led approach. When the child reports a moving sensation, careful visualization should precede empirical treatment.

Indirect exposure and pediatric risk

The absence of direct animal contact is the main teaching point. Tick ecology is not restricted to visible animal handling. Ticks may be associated with dogs, livestock, reptiles, birds, and small mammals in the wider environment [4,9,16-19,21,34]. A child may encounter a tick through floors, mats, gardens, school areas, clothing, or shared spaces even when the household does not own animals. This broader explanation is consistent with socio-ecological research on human otoacariasis and with studies of ticks across domestic and wild hosts in Sri Lanka [1,3,19].

The literature on school children and ectoparasitic infections also supports attention to child behavior. Children have frequent contact with ground surfaces and may be less likely than adults to notice an arthropod on clothing or skin [14]. The present case does not prove where the tick came from, but it shows why clinicians should not stop at the question of pet ownership. A more complete history should ask about outdoor play, sleeping arrangements, school environments, recent travel, contact with houses that keep dogs, nearby stray animals, bird nests, rodents, and stored clothing or bedding.

Management lessons

The main procedural lesson is that a live attached tick should be immobilized before extraction when this can be done safely. In this case, 2% lidocaine was used for 10 minutes before removal. The rationale was to reduce movement and attachment reflexes, permitting controlled traction with less force. This is particularly important in the external auditory canal, where tearing of the canal skin, retained mouthparts, and tympanic membrane injury are avoidable risks. The tick was grasped close to the attachment site and removed intact, which is preferable to grasping and crushing the posterior body.

The likely pathway remains uncertain, and this uncertainty should be acknowledged. The tick could have been introduced through a contaminated fabric, a play area, a visitor's clothing, a school environment, or a peridomestic animal that did not come into direct contact with the child. None of these pathways can be proven retrospectively. However, the literature on host

diversity and environmental tick ecology makes them plausible enough to influence clinical history taking and prevention advice [13,17-19,25,26].

Post-extraction inspection is equally important. The clinician should not consider the procedure complete once the tick is outside the canal. The attachment site should be examined for retained fragments, bleeding, and tissue injury. Residual excreta and loose debris should be removed because they may irritate the canal and obscure the tympanic membrane. In the present case, gentle microsuction, antiseptic irrigation, and topical corticosteroid-antibiotic therapy were followed by complete clinical resolution at 48 hours.

Comparison with previous reports

The case aligns with previous Sri Lankan reports in its acute presentation and successful local management but differs in its lack of recognized animal contact. Studies of human otoacariasis have emphasized tick species diversity, seasonal variation, and environmental risk [1,3]. A separate report of intra-aural tick bite causing unilateral facial nerve palsy shows that tick attachment in the ear can have more serious consequences than local pain alone [15]. The absence of neurological signs in the present patient is reassuring, but it does not remove the need for advice about warning symptoms.

The case also relates to the broader literature on tick-borne disease. Tick-borne infections depend on the ecology of ticks, hosts, and pathogens [25]. Surveillance studies such as those addressing Lyme disease in Canada demonstrate the value of long-term tick and animal monitoring [7]. In Sri Lanka, spotted fever rickettsial infection has been reported after massive tick bites [31]. A single intra-aural bite in an asymptomatic child does not justify unnecessary testing in every case, but it does justify clear follow-up instructions and clinical vigilance if fever, rash, malaise, lymphadenopathy, or neurological symptoms appear.

The use of lidocaine in this case should be interpreted as a procedural measure rather than as a substitute for careful extraction. Immobilization may make removal easier, but it does not remove the need for magnification, correct forceps placement, and post-removal inspection. The most important technical principle is controlled removal of the whole organism with minimal trauma to canal skin. If visualization is poor, if the tick is attached to the tympanic membrane, or if the child cannot cooperate, referral to a clinician with otologic equipment is appropriate.

Public health and prevention

Prevention advice should be proportionate. Families should not be blamed when no animal contact is identified. Instead, they can be advised to clean bedding, carpets, floor mats, and child play surfaces; inspect clothing after outdoor play; reduce contact with areas used by stray dogs or rodents; and seek veterinary or public health advice if animals around the home are heavily infested. Since ticks can affect both animal health and human exposure, the veterinary burden described in farm and dairy animals has relevance to household risk reduction [32,33].

Clinically, the report supports better documentation. Whenever possible, the removed tick should be preserved or photographed, the attachment site should be recorded, and follow-up findings should be noted. Such documentation could help determine whether urban and peri-urban pediatric cases without direct animal contact are isolated events or an under-recognized pattern. Better case recording would also complement existing Sri Lankan work on tick diversity, dog ticks, animal hosts, and mite-borne conditions [1,4,5,19].

The rapid improvement at 48 hours suggests that early removal limited the inflammatory process. This observation should not be generalized to all cases. Delayed presentation, deeper attachment, retained fragments, secondary bacterial infection, or systemic tick-borne illness could require longer treatment and closer follow-up. The present case therefore supports early diagnosis, but it also highlights the need to individualize management according to the attachment site, the completeness of removal, and the patient's systemic condition.

Limitations

This report has limitations. Species-level identification was based on clinical morphology and compatibility with Rhipicephalus sp.; molecular confirmation was not performed. No pathogen testing was performed on the tick. The suspected indirect exposure route could not be proven because environmental sampling of the home, school, or peridomestic surroundings was not conducted. Follow-up was limited to early clinical resolution. These limitations are typical of single case reports, but they should be acknowledged when interpreting the implications of the case.

Another practical implication concerns communication. Parents may feel surprised or concerned when a tick is found despite no animal contact. A neutral explanation is helpful: ticks may move through the environment before attaching, and not every case indicates neglect or direct contact with animals. This balanced message supports prevention without blame.

The case also supports conservative antimicrobial reasoning. Local topical therapy was used because the lesion was confined to the canal and resolved rapidly. Systemic therapy would be more appropriate if there were spreading cellulitis, fever, systemic symptoms, or clinical suspicion of tick-borne infection.

Research implications

Future research should move beyond isolated case description. Prospective recording of pediatric otoacariasis could clarify whether cases without direct animal contact occur mainly in urban, peri-urban, or rural settings. Environmental sampling

would help test whether household substrates, school play areas, stray dogs, rodents, or birds contribute to exposure. Species-level identification and, where indicated, pathogen testing of removed ticks would improve the connection between clinical otology and vector surveillance. These steps would make case reports more useful for both clinicians and public health workers.

For clinicians, the threshold for otoscopic examination should therefore remain low. The combination of unilateral pain, itching, and movement sensation is enough to justify careful inspection, irrespective of exposure history. This keeps management cautious, clear, and appropriate for routine outpatient otology practice.

CONCLUSION

This case report describes human otoacariasis in a 12-year-old child caused by an attached hard tick compatible with Rhipicephalus sp. The child had acute unilateral otalgia, itching, and a crawling sensation, but she had no pet ownership and no recognized contact with domestic or wild animals. The case therefore broadens the clinical understanding of pediatric otoacariasis. Direct animal contact remains an important risk factor, but it should not be treated as a required condition for diagnosis. Indirect exposure through household, school, or peridomestic environments is a plausible route and should be explored during history taking.

The case also emphasizes the importance of careful examination and procedural technique. Video-otoscopy allowed direct identification of the parasite, assessment of the tympanic membrane, and safe planning of extraction. Chemical immobilization with 2% lidocaine before removal reduced the risk of active movement and facilitated intact extraction. Removal under direct vision, grasping close to the attachment site, gentle clearance of debris, local antiseptic care, and topical anti-inflammatory-antimicrobial treatment were followed by complete symptom resolution within 48 hours. These steps provide a practical sequence for uncomplicated pediatric tick-related otoacariasis.

Clinicians should consider otoacariasis in children who present with unilateral acute ear pain, pruritus, and a sensation of movement, even when parents deny animal contact. The post-extraction plan should include inspection for retained fragments, confirmation of tympanic membrane integrity, short-term review, and advice about systemic warning symptoms. Families should be guided toward proportionate environmental measures rather than alarm. Future reports should document species identification, exposure history, environmental setting, management method, and follow-up outcome. Accumulated data of this kind would clarify the role of indirect transmission in urban and peri-urban pediatric otoacariasis and help refine practical management protocols.

The main message is practical. A tick in the ear should be treated as an attached living parasite, not as an ordinary foreign body. The clinician should first see it clearly, then immobilize it if appropriate, remove it intact, clean the canal, inspect the attachment site, and provide follow-up advice. This sequence is simple but protects the tympanic membrane and reduces the chance of retained fragments or persistent inflammation.

The report also supports broader prevention counseling. Families should be informed that absence of pet ownership does not completely remove the possibility of tick exposure. Attention to bedding, mats, carpets, clothing, child play areas, and stray animal contact around the home is reasonable after such a case. Further documentation of similar cases will help determine whether indirect environmental exposure is a rare exception or an under-recognized feature of pediatric otoacariasis.

In summary, the case adds a small but relevant observation to the literature: pediatric otoacariasis may occur when the usual exposure history is absent. That observation should encourage careful examination rather than overinterpretation of history. Early recognition and gentle complete removal remain the basis of good outcome. This study therefore reinforces a simple clinical rule: listen to the symptom pattern, examine the canal carefully, and manage the attached parasite under direct vision. Such care is realistic for most otolaryngology clinics.

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