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IB Mcintosh*

St. Ninians Travel Health Centre, Shirras Brae, Stirling, UK

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***Corresponding author:** IB Mcintosh, St. Ninians Travel Health Centre, Shirras Brae, Stirling, UK, E-mail: iain.mcintosh@virgin.net

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Case Report

Infection from Tiny, Unwanted Travel Companions

A 50 year old woman presented at surgery on return from a holiday in Tanzania. She was complaining of multiple, small red, very itchy, lesions scattered round her waist line, on the inside of thighs and upper arms. She had been scratching these areas and there was now reddened skin, with lacerations on her thighs, seeping of the wounds and small patches of sepsis. On questioning she stated that her flight from Dar as Salaam had been delayed 24 hours and as local hotels were full, she had been forced to stay overnight in an insanitary and overcrowded hostel. On examination the lesions were typical of flea bites, with secondary bacterial infection.

World travel often brings unwelcome companions in the shape of fleas, ticks, mites and lice. The returning traveller with skin embellished bites can present the consulting nurse or doctor with a diagnostic dilemma.

Flea-borne organisms, lice and ticks are widely distributed and vector diseases could become epidemic with global climate change. It will influence their development, distribution, and disease transmission, as temperature and humidity are crucial for their survival. Warmer temperatures could lead to an increased expansion of vectors. Diagnosis and treatment of bitten travellers can be delayed. Some health care professionals, unaware of the locational presence of these vectors, fail to consider them when determining the cause of a travellers' illness.

Fleas

Pulex irritans (human flea) There is no flea specific to humans, and only a fraction of all fleas regularly come into contact with humans. Many however, associate with domesticated animals. The human flea has a cosmopolitan distribution and is mistakenly named, as it attacks many different mammals, including guinea pigs, domestic dogs, cats, rats, and goats. Infestations can reach phenomenal levels, where residents share dwellings with livestock, or where corralled animals are adjacent. Backpackers and budget travellers often frequent these locations, sometimes the only overnight shelters available in rural areas and are exposed to frequent bites. Sleeping accommodation on trains and lodging houses can also be home to these unwanted residents. Flea bites can be a risk in hostels and better quality hotels, if bed sheet laundering is not scrupulous. Travellers are often exposed to their bites, which may only be a nuisance but can potentially bring serious disease.

Ctenocephalides felis (cat flea) and Ctenocephalides canis (dog flea)

The cat flea: The cat flea commonly affects cats and dogs but is also found on rats and is the flea most likely to be found in human domestic dwellings. The dog flea is less common on dogs, than cat fleas.

Northern rat flea: Northern rat flea, particularly Rattus norvegicus, infests commensal rats in temperate regions of the world especially rats with underground burrows. N. fasciatus, a poor vector of plague has been involved in transmission of salmonella enteriditis, it occasionally infests mice, squirrels, carnivores and humans. Plague, caused by Y. pestis. Is a re-emerging disease and a serious public health problem especially in Africa [1].

It primarily affects rodents, with potential to spread to humans and there are about 2000 cases reported globally each year. Fleas are also vectors of murine typhus (Rickettsia typhi), and have a role in transmission of rural epidemic typhus (Rickettsia prowazekii). Bartonella henselae, the agent of cat-scratch disease, results from flea transmission of Bartonella spp [2], Flea-borne spotted fever (Rickettsia felis) is another global remerging condition.

Diagnosis: Skin response to flea bites is delayed. The initial lesion is a punctuate, haemorrhagic area at the site of the attack. As the flea explores the skin, lesions may occur in clusters, with a wheal around each bite. Wheal size reaches a peak in 5 to 30 minutes, with a accompanying itch persisting

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for a week or more There is transition to a hard papillar lesion in 24 hours with the reaction appears faster in hypersensitive individuals.

Treatment involves an antihistamine or anti-inflammatory preparation and occasionally an antibiotic if scratching brings bacterial infection.

Differential diagnosis

Pediculosis and pthirus bites: Humans attract lice with different bodily habitats, the resultant pediculosis–the head and body (clothing) louse and pthirus- the (pubic), crab louse. In developing countries with poor hygiene, or when sanitation facilities breakdown, global travellers and aid workers host the parasites. Pediculosis capitis lice prefer to inhabit head hair and clothing. Body louse can be head lice which have migrated

The head louse exists almost everywhere in the human domain and is the most common ectoparasite [3]. Head lice need to feed often and must remain continuously on the host, When feeding they attach to host skin and probe until finding a blood vessel, then injecting anticoagulating saliva in to the wound.

Pruritus- and immune mediated reaction to lice saliva - is the most common manifestation and can interfere with sleep. Reddish intensely itchy papules, often in the retro auricular scalp area occur. Repeated scratching leads to excoriation and infection with staph aureus and streptococci. Head lice may passively carry bacteria from infected to healthy areas of the scalp, with impetigo common. Diagnosis depends upon finding a living louse, from wet hair-combing.

Treatment

Various treatments are used as topical pediculocides, with no consensus on best treatment as lice have a remarkable ability to become resistant to medications. . Most adverse reactions are local and mild.

Topical pyrethroids and organophosphates are most widely used. The former Pyrethroids act on the louse nervous system with a knock-down effect. Most adverse reactions are local and mild.

Organophospates.Malathion inhibits acetylcholinesterase causing louse death by hyperexcitabailithy and exhaustion. It can cause skin irritation and bronchospasm Oral drugs have been used as lice ingest them when blood feeding off the host the most promising is ivermectin - amacrolytic lactone as oral drugs are not effective against lice eggs a second dose is required 8 days later. Ivermectin is a macrolytic lactone and is well, tolerated.

Prevention. Insect repellent containing DEET (on skin or clothing) or permethrin (to clothing or equipment).

Bedbugs (Cimex lectularius): Are blood-sucking insects that live in cracks and crevices. Their presence is not determined by the cleanliness of the living conditions where they are found.Attracted by body heat and carbon dioxide, they crawl out at night to bite exposed skin and feed on blood, and People develop itchy red bumps. 15 to 30 minutes after being bitten, which can last for several days. Bites are usually occur on the face, neck, hand or arm and ankles and are often mistaken for mosquito bites but bedbug bites often occur in straight lines [4].

Although bedbugs are intensely itchy, they do not transmit human diseases. Adult bedbugs look like lentils and up to 5mm long,are visible to the naked eye and vary in colour.They are very resilient, can survive for up to a year without feeding and may be found in all types of housing, but are more common in hotels or hostels. They prefer to inhabit crevices in fabric or wood over plastic and metal, and often hide under mattresses or along bed headboards and joints.

Management

- If clothes or bedlinen have become infested, wash them at 60C, or put them in a dryer on a hot setting for 30 minutes to kill the bugs
- To kill bugs, use insecticide spray specially designed for bedbugs –Insecticide sprays may be becoming less effective as the bugs build resistance to them. Ordinary insect repellent for mosquitoes and ticks is not effective
- Antihistamine tablets and ointment to relieve pruritus.

Ticks: Ticks are small, blood-sucking arthropods related to mites. They feed on the blood of different animal hosts with some feeding on human blood. The one most likely to bite humans in Britain is the Sheep tick, *Ixodes ricinus* [5]. It is sensitive to climatic conditions, requiring a relative humidity of at least 80% to survive during off-host periods, and is restricted to wood/heathland moorland, rough pasture, forests and urban parks. Other ticks in Europe and In America carry different diseases. In the USA the highest risk comes from the Deer tick, *Ixodes scapularis* [5].

The tick bite is usually initially painless, then after 12 hours becomes itchy. People are often only aware they have been bitten when they see a feeding tick attached to skin. The risk of infection increases the longer the tick is attached, but this can happen at any time during feeding, with Lyme borreliosis and Rickettsiosis possibilities.

2,000 to 3,000 new cases of Lyme disease occur in England and Wales annually with. 15% of cases infected while people are abroad.6 60% ofpeople with early-stage Lyme disease develop a distinctive circular rash -erythema migrans- at the site of the tick bite, usually around three to 30 days after being bitten. Some also experience flu-like symptoms in the early stages.The prognosis for Lyme disease is generally good .Even when not treated it is frequently self-limiting and resolves spontaneously. Antibiotic treatment (doxycycline, amoxicillin) in people with early Lyme disease is highly effective Resolution of signs and symptoms have been reported in up to 90% of people with early Lyme disease in randomized controlled trials [8,9].

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