

ALOPECIA AFTER TICK BITE

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Few parasites are as versatile as ticks in causing or transmitting diseases in man and domestic animals. The disorders of man in which ticks are involved are the following:¹⁻⁵

Dermatoses. Acute local reactions include pain, itch, urticarial swelling, subcutaneous haemorrhage, necrosis and ulceration. Chronic reactions include ulceration; persistent papules, nodules or tumours whose histological appearances may suggest squamous carcinoma or some benign or malignant disease of the reticulo-endothelial system,⁴ eczema and lichenification and allergic reactions akin to papular urticaria.⁵ Tick bites are often sites for secondary bacterial infections and occasionally for myiasis.

Envenomization. Inoculation of toxic salivary fluids may result in severe systemic disturbances with generalized urticaria and vomiting (ixodism).

Tick paralysis. A toxin elaborated by some ticks causes an acute ascending flaccid paralysis which, in children, may be mistaken for infantile paralysis. Affected adults usually have paralysis of a limb.

Otoacariasis. Some ticks favour the auditory canal as a feeding site.

Infections transmitted. Diseases conveyed to man by ticks include rickettsioses (e.g. Rocky Mountain spotted

fever; South African tick-bite fever), viroses (e.g. Colorado tick fever; louping ill), spirochaetoses (tick-borne relapsing fever), and bacterial infections (tularemia and, perhaps, erysipeloid). Erythema chronicum migrans and acrodermatitis chronica atrophicans are almost certainly due to some micro-organism transmitted by ticks,⁶ and the list of tick-borne diseases is constantly being lengthened.

I have recently seen two patients with an unusual cutaneous reaction, alopecia of the scalp, following tick bite.

Case Reports

The patients were children, a White boy aged 7 years and a Cape Coloured boy of 2 years. The sequence of events was identical in both. The mother accidentally discovered a tick firmly attached to the scalp and picked it off. Over the next week the hair fell out in a circle, 3 cm. in diameter around the bite, leaving the area quite bare. There was no systemic disturbance.

The children were first seen about 10 days after removal of the tick when hair loss had ceased (Fig. 1). In the centre of the bare area was a little scab which was removed to uncover a tiny clean depression. The bare scalp was normal in all respects except that the surface was slightly scaly. A few long hairs remained, but there were no stumps or exclamation-mark hairs such as are often found in alopecia areata. Hairs in the marginal area were normal and there was no increase

of telogen hairs. No fungous elements were found in hairs or scales.

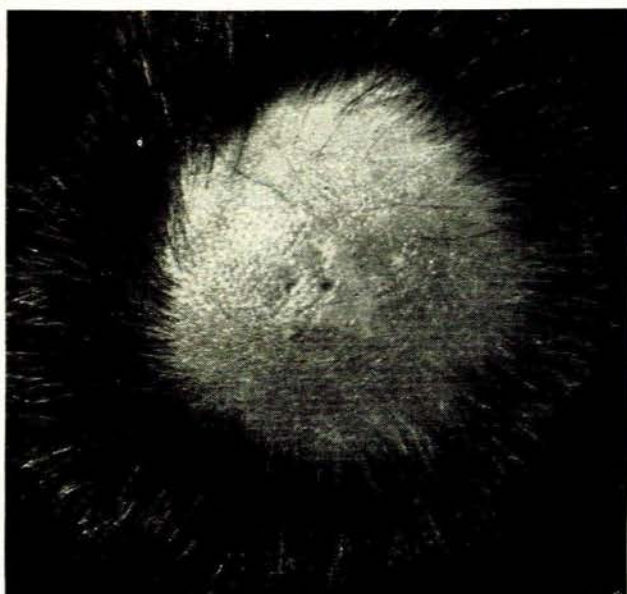


Fig 1. Alopecia after tick bite. State of scalp in White boy 10 days after removal of tick.

No further loss of hair occurred after the first week. Regrowth over the whole area was visible after 2 weeks in the case of the Cape Coloured boy; thereafter he was lost to view. The White boy, seen after a month, showed regrowth at the periphery of the lesion; after 2 months the whole area was covered with fine hairs 3-5 mm. long.

In neither case was it known how long the tick had been attached to the scalp before it was removed. The parasites had not been retained, and identification was impossible. In both cases the tick was described as small, hard and brown, suggesting that it was an ixodid tick.

DISCUSSION

A case identical to those described was seen in January 1965 by Dr. H. van der Meulen of Cape Town. The patient was a White boy aged 8 years. An area 4 cm. in diameter was denuded within a week of removal of a tick from the scalp. Regrowth was complete after 3 months except for a tiny central area which had been ulcerated.

I have discovered only one apparently identical case in the literature, that described by Sauphar as 'Alopécie peladoïde consécutive à une piqûre de tique.'⁷ Severe itch at the back of the head in an 8-year-old boy led to the discovery of a tick whose removal was followed by a chain of events the same as in my cases.

Ross and Friede⁸ described 2 cases of alopecia in children aged 8 and 11 years caused by the bites of *Dermacentor variabilis*. Multiple bites had produced a moth-eaten appearance of the occipital scalp reminiscent of that seen in the alopecia of secondary syphilis. Individual bare areas were oval in shape, the long axis measuring about 1.3 cm. The hair loss was permanent.

According to the authorities at the Veterinary Research Institute, Onderstepoort, Transvaal, cases similar to those I have described are not uncommon in animals, but they

do not appear to have been reported in the literature. Such cases are generally associated with ticks possessing long mouth parts such as *Hyalomma* or *Amblyomma*. At the site of penetration of the mouth parts there occurs a focal necrosis surrounded by an erythematous zone. The salivary secretion of the tick contains unidentified substances which affect hair follicles causing the hair to fall, leaving a squamous appearance of the skin surrounding the bite.

A case of alopecia following the bites of ixodid ticks in a horse (South African) is illustrated in the *Corpus Iconum Morborum Cutaneorum*.⁹

The earliest relevant comment is cited by Nuttall and Warburton.¹⁰ Pliny, in his *Historia Naturalis*, relates that the blood of a healthy pulled-out tick is said to act as a depilatory.

Tick saliva contains spreading agents and anticoagulants and may contain toxins and substances causing haemolysis, agglutination, histolysis and local anaesthesia. I had thought that a toxin might be the cause of the alopecia in these cases, but Arthur Rook¹¹ (Cambridge, England) suggested that anticoagulants were equally suspect. Anticoagulants are at present the commonest cause of chemical alopecia, and all those in use, heparin, the heparinoids and the coumarins, will induce alopecia. The alopecia they produce is fundamentally of the telogen effluvium type, but their mode of action on the hair follicle is uncertain. Heparin has some antimitotic activity, but other mechanisms are probably concerned.

Lack of accurate information about the ticks involved and about the nature and constituents of tick saliva make further speculation pointless.

SUMMARY

Two cases are described in which localized alopecia followed the removal of a tick from the scalp. The alopecia is not permanent. The role of ticks as causes or vectors of disease in man is briefly discussed.

REFERENCES

1. Herms, W. B. and James, M. T. (1961): *Medical Entomology*, 5th ed. New York: The Macmillan Company.
2. Rivers, T. M. and Horsfall, F. L. (1959): *Viral and Rickettsial Infections of Man*, 3rd ed. London: Pitman Medical Publishing Co.
3. Hull, T. G. (1955): *Diseases Transmitted from Animals to Man*, 4th ed. Springfield, Ill.: C. C. Thomas.
4. Allen, A. C. (1954): *The Skin, a Clinicopathologic Treatise*. St. Louis, Miss.: C. V. Mosby.
5. Marshall, J. (1964): *Skin Diseases in Africa*. Cape Town: Maskew Miller.
6. *Idem* (1958): *S. Afr. Med. J.*, **32**, 753.
7. Sauphar, L. (1921): *Bull. Soc. franç. Derm. Syph.*, **28**, 442.
8. Ross, M. S. and Friede, H. (1955): *Arch. Derm.*, **71**, 524.
9. Nékám, L. (1938): *Corpus Iconum Morborum Cutaneorum*, Part 3, Leipzig: J. A. Barth.
10. Nuttall, G. H. F. and Warburton, C. (1908-1915): *Ticks: a Monograph of the Ixodoidea*. Cambridge: Cambridge University Press.
11. Rook, A. (1965): *Brit. J. Derm.*, **77**, 115.