

SHORT REPORTS

Nail bed ablation—excise or cauterise? A controlled study

Ingrowing toenail and onychogryphosis cause much disability. Pain, with inflammation or sepsis, is the presenting symptom in the ingrowing toenail, which is common in adolescents. Onychogryphosis causes pain but is seldom associated with sepsis. It occurs spontaneously in the elderly and may follow a history of trauma or repeated avulsions of the nail in persons of any age. Removal of the nail and ablation of the nail bed is the treatment of choice for onychogryphosis. This treatment is also indicated for ingrowing toenail when simpler methods fail,¹ and occasionally primarily when the ingrowth affects both sides of the nail.

Patients, methods, and results

A total of 107 patients were subdivided into either an onychogryphosis or an ingrowing toenail group and then, depending on either an odd or an even hospital number, were treated by Zadik's procedure or by phenol cauterisation. All patients were reviewed after three days and subsequently until their wound healed. Zadik's procedure was performed as described by Fowler.² Under local anaesthesia and tourniquet control two oblique half inch (1.25 cm) incisions were made, beginning at the junction of the nail fold and nail walls. Three flaps were dissected which consisted of skin only; the layer of epithelium on the deep surfaces of the nail fold and nail walls was left in situ. The nail was then avulsed and the skin flaps retracted backwards. Using sharp dissection a block of tissue was removed which consisted of the germinal matrix and the overlying deep layer of the nail fold and walls. The skin flaps were then sutured back to cover the raw area. If there was gross sepsis Zadik's procedure was delayed until two weeks after nail avulsion, which was performed initially. A similar technique for phenol cauterisation was used as described by Ross.³ Under ring block local anaesthesia blood was exsanguinated from the toenail with a small Esmarch-type bandage and a soft rubber tourniquet applied. After avulsion of the nail 88% phenol was applied to the nail bed for three minutes. Excess phenol was then removed with surgical spirit and Tulle Gras and standard dressings applied. The tourniquet was removed. All patients were reviewed at or after six months. The results are summarised in the table.

Results of treating onychogryphosis and ingrowing toenail with either Zadik's procedure or phenol cauterisation

	Procedure	
	Zadik's	Phenol cauterisation
<i>Onychogryphosis</i>		
No of patients	20	17
Average healing time (weeks)	2	2
Recurrence of nail spikes at or after 6 months (average 10 months)	7/20	1/17
Further treatment for recurrence	3/20	0/17
<i>Ingrowing toenail</i>		
No of patients	34	36
Simple nail avulsion with definitive procedure later	12	0
Average healing time (weeks)	4	3
Recurrence of nail spikes at or after 6 months (average 11 months)	11/34	7/36
Further treatment for recurrence	6/34	3/36

Comment

These results show that in our hands phenol cauterisation compares favourably with Zadik's procedure in both onychogryphosis and ingrowing toenails. Phenol cauterisation resulted in fewer recurrences of nail spikes in both groups and further surgical treatment was required in only 6% of patients compared with 18% with Zadik's procedure. No cases of osteitis occurred with either procedure. These results are similar to those of Suppan and Ritchlin,⁴ who claimed a 98% success rate in 240 cases with phenol cauterisation, and those of Murray and Bedi¹ who had a reoperation rate of 16% after Zadik's procedure. Our recurrences with phenol were possibly related to technical problems. Absolute haemostasis of the nail bed is essential. If there is any haemorrhage exsanguination after nail avulsion should

be repeated. In a small pilot study phenol applied for under three minutes resulted in a higher recurrence rate. Perhaps the higher recurrence rate in the ingrowing toenail group might be reduced by applying phenol for longer.

Phenol cauterisation has a further advantage that it need not be delayed in infected toenails; phenol is itself an antiseptic and can be applied by the relatively inexperienced. Eight patients with both big toes affected, who had the randomised procedure on the worse toe and the opposite treatment on the other, all remarked on the lack of postoperative pain with phenol compared with Zadik's procedure. We therefore advocate phenol cauterisation of the whole nail bed as the procedure of choice. The low incidence of nail spikes and keratin plaques in our phenol group indicates that a partial or wedge cauterisation of the nail bed with phenol, as advocated by Dumble,⁵ may also be satisfactory for an ingrowing toenail affecting only one side.

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¹ Murray, W R, and Bedi, B S, *British Journal of Surgery*, 1975, **62**, 409.

² Fowler, A W, *British Journal of Surgery*, 1958, **45**, 382.

³ Ross, W R, *Surgical Clinics of North America*, 1969, **49**, 1499.

⁴ Suppan, R J, and Ritchlin, J D, *Journal of the American Podiatry Association*, 1962, **52**, 900.

⁵ Dumble, R, 1979. In press.

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Prurigo and pets: the benefit from vets

Cat and dog fleas cause pruritic papules in man, as do the mites *Sarcoptes scabiei canis*, *Cheyletiella yasguri* of dogs, and *Cheyletiella blakei* of cats.¹⁻³ Flea and mite infestations are regularly seen in small-animal veterinary practice in Denmark, as in Britain.^{3,4} As these arthropods are rarely found on man Bagnall and Rook recommended that if a patient has unexplained prurigo all animal contacts should be examined.⁵ To assess the benefit from veterinary help we performed a parasitological examination of 143 animals who had contact with 111 patients with unexplained prurigo, controlled any transmissible ectoparasite, and then assessed the results.

Patients, methods, and results

A total of 111 patients with unexplained prurigo and 143 animal contacts (108 dogs and 35 cats) were referred to us by dermatologists. The animals were examined clinically or, in 10 cases, material vacuum-cleaned from the animal or its basket was studied. Mites were identified in skin scrapings. Flea infestation was diagnosed when adult fleas or their faeces were found. The table shows the parasitological findings. All the animals with mite infestation had symptoms, and five of the exposed patients had intended to consult a vet for this reason. Seven of the patients exposed to fleas knew that their animals were infested and believed that this caused their eruption.

Mites (on four dogs) were removed by washing the animal three to six times in a 0.2% solution of metrifonate at intervals of two to four days. Fleas (on 35 dogs and 25 cats) were eradicated from the house by vacuum cleaning and by spraying floors, carpets, and furniture with a 2% solution of methoxychlor twice 10 days apart. The animal was washed once with an insecticidal shampoo and provided with a flea collar. We informed the referring dermatologists of our findings but did not interfere with the patients' treatment.

One month later the patients were followed up. All six patients exposed

Parasites found on animal contacts of patients with unexplained prurigo, and the response to treatment

Ectoparasite	No of animals	No of patients	No of patients cured after treatment of animal	No of patients cured after dermatological treatment
<i>Cheyletiella yasguri</i>	2	3	3	
<i>Sarcoptes scabiei canis</i>	2	3	3	
Fleas	60	55	44	4
None	79	50		14
Total	143	111	50	18

to animal mites were cured with no treatment except extermination of the ectoparasites, as were 44 of the 55 patients exposed to fleas (table). In four patients exposed to fleas human scabies had been diagnosed and cured. Of 50 patients not exposed to animal ectoparasites, 14 had recovered: five after treatment for scabies, one after extermination of bedbugs in her home, and eight without treatment.

Comment

Apart from 10 patients with subsequently diagnosed human scabies or cimicosis, 57 out of 101 patients with unexplained prurigo were shown, after veterinary examination of their pets, to have been exposed to skin pathogens. Fifty of these patients (88%) were cured within one month by ridding their animals of mites and fleas. Even if some patients had consulted a vet, in many the prurigo would have persisted without veterinary intervention.

When prurigo is not explained after medical investigation a search for ectoparasites on animal contacts is a cheap diagnostic aid, which may provide the clue to effective treatment.

¹ Bolam, R M, and Burt, E T, *British Medical Journal*, 1956, **1**, 1130.

² Hewitt, M, et al, *British Journal of Dermatology*, 1971, **85**, 215.

³ Thomsett, L R, *British Medical Journal*, 1968, **3**, 93.

⁴ Thoday, K L, *In Practice*, 1979, **1**, 5.

⁵ Bagnall, B, and Rook, A, *Recent Advances in Dermatology*, 1977, **4**, 59.

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Objective assessment of treatment in severe angina

Conventional trials of antianginal treatment rely on the patients' subjective reports of chest pain and how often they consume glyceryl trinitrate. While relief of pain is all-important, objective measurements increase the validity of the results and help to quantify improvement. Patients with frequent angina often have episodes of ST-segment depression without pain as shown by 24-hour ambulatory monitoring.¹ If these episodes are due to myocardial ischaemia, however produced, the effects of specific treatment on them are of interest.² Exercise precordial mapping provides a reliable and reproducible measure of the degree of myocardial ischaemia at a given work load,³ and 24-hour ambulatory monitoring of the ECG provides physiological information about the frequency, severity, and time course of ST-segment change.¹

Patients, methods, and results

We studied six men aged 36-58. All had severe angina at least once daily with strongly positive exercise tests. All underwent four treatment periods

of one week each, receiving (1) glyceryl trinitrate alone (control), (2) propranolol 120 mg four times daily, (3) nifedipine 20 mg three times daily, and (4) propranolol plus nifedipine. The order of treatment varied but we did not attempt randomisation. At the end of each period the patient underwent 16-point precordial mapping after exercising on a bicycle ergometer to the same work load as that achieved in the control period. Full details of this method have been reported.³ The position of maximal exercise-induced ST-segment depression on the precordium was chosen for recording the 24-hour ambulatory tape,¹ using the Oxford Medilog recorder and Reynolds pathfinder high-speed analyser. Patients were encouraged to return to their normal daily activities and to indicate angina by pressing the "event" button of the recorder.

The exercise maps were analysed by counting the number of positions showing significant ST depression (area of ischaemia) and summing the number of millimetres of ST depression at all these points (Σ ST). The 24-hour ECG tapes were analysed by counting the number of episodes of significant ST depression with and without recorded pain. The maximum heart rate achieved, the degree of ST depression, and the duration of the episodes were also noted. Significant differences were sought using Friedman's two-way non-parametric analysis of variance.

The table shows the results for each treatment regimen. The combination

Measurements of ischaemia in six patients calculated from precordial mapping and 24-hour ECG recording

Treatment	Area of ischaemia*	Σ ST†	No of episodes of painful ST depression/24 h	No of episodes of pain-free ST depression/24 h	Total No of episodes of ST depression/24 h
Glyceryl trinitrate	39	54	17	30	47
Propranolol	33	37	9	11	20
Nifedipine	42	56	7	16	23
Propranolol + Nifedipine	11	11	2	8	10

*Number of positions showing significant ST depression.

†Number of millimetres of ST depression in area of ischaemia.

of drugs proved significantly superior ($P < 0.01$) to either drug alone and to glyceryl trinitrate as measured by the area of ischaemia and Σ ST. All three treatments proved superior to glyceryl trinitrate ($P < 0.01$) in reducing the total number of episodes of ST depression over 24 hours, but only the combination reduced the numbers of both pain-free and painful episodes significantly.

Comment

This pilot study has shown the feasibility of using objective, non-invasive measures of ischaemia in trials of antianginal treatment. Its design (short, non-randomised treatment periods, open structure, no placebo control) does not allow definite conclusions to be drawn about the efficacy of the treatments, though the objective evidence strongly supports a synergistic effect between propranolol and nifedipine. The maximum heart rate achieved on exercise was lower when patients received propranolol than nifedipine. The heart rate was intermediate when the drugs were combined. Pain-free ST-segment depression, whatever its mechanism, was significantly reduced by the combination of drugs. Nocturnal ST-segment changes were also reduced.

These methods provide an objective method of assessing antianginal treatment and could profitably be used in a larger controlled trial of this potentially useful combination of drugs.

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¹ Selwyn, A P, et al, *British Medical Journal*, 1978, **2**, 1594.

² Schang, S J, and Pepine, C J, *American Journal of Cardiology*, 1977, **39**, 396.

³ Fox, K M, et al, *British Heart Journal*, 1978, **40**, 1339.

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