

Epitomes

Important Advances in Clinical Medicine

Dermatology

The Scientific Board of the California Medical Association presents the following inventory of items of progress in dermatology. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome, and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers or scholars to stay abreast of these items of progress in dermatology that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Dermatology of the California Medical Association and the summaries were prepared under its direction.

Reprint requests to Division of Scientific and Educational Activities,
California Medical Association, PO Box 7690, San Francisco, CA 94120-7690

Removing Tattoos

TATTOOS ARE ACCIDENTAL OR INTENTIONAL INJECTIONS OF pigment into the skin. This pigment is long-lasting and, when removal is required, physicians must choose among a variety of methods, none of which will restore the skin to its pretattoo appearance.

Methods of tattoo removal include excision with primary closure or skin grafting, serial excision, tissue expansion and excision, liquid nitrogen cryotherapy, laser vaporization, dermabrasion or salabrasion, caustics, infrared coagulator and serial tangential excision. An excellent summary of tattooing and the older methods of tattoo removal appeared in a special issue on tattoos in *The Journal of Dermatologic Surgery and Oncology* in 1979.

Excision is clearly the best way to remove a tattoo that is small or configured favorably for simple primary closure. In such cases, 100% tattoo removal is assured. The procedure is simple and cost-effective and results in a predictable and usually cosmetically acceptable scar. Negative aspects of excision include a delayed widening of the scar line, hypertrophic or keloidal scarring and limited use of the affected body area until the wound gains sufficient tensile strength not to dehiscence. Over joints or skin with limited suppleness, primary closure may not be possible.

When skin grafting, tissue expansion or serial excision is necessary, strong consideration should be given to alternative methods of removal. These techniques are very time-consuming and expensive, especially if time lost from work is considered. Donor scars from skin grafts add to the discomfort and cosmetic liability of the technique. Graft texture and color differences from surrounding skin may also be a problem.

Dermabrasion can be a valuable method of removing larger tattoos in areas such as the dorsal forearms where hypertrophic scars are less frequent. It is particularly helpful in removing pastel tattoos, but is poor at removing black ink tattoos. Hypertrophic scarring is a frequent complication of dermabrasion. Residual pigment shadowing frequently follows dermabrasion, and the technique does not permit total tattoo removal at the time of the surgical procedure; the surgeon does not know the result of the procedure until weeks to months postoperatively. A test area before treatment is recommended.

Laser removal of tattoos has recently gained in popularity. The versatile carbon dioxide laser is usually the laser of choice for removing tattoos. It is simple to use, compact, mobile and increasingly less expensive. The laser can generally be plugged into any office outlet. Clear glasses block the CO₂ laser light so there is excellent visualization of the operative site. With a continuous-mode operation, large tattoos can be removed quickly. The CO₂ laser is not color-specific. When correctly used there should be little thermal damage of adjacent tissues. A tattoo can be completely removed in one session, and there is no bleeding of the surgical site. Healing occurs by secondary intention, and the patient can return to work immediately after the operation. This alone makes laser surgery cost-effective. The laser treatment can be extended to adjacent areas to avoid a "negative image" scar. Postoperative care is simple and there is little or no postoperative pain. Areas previously thought difficult to treat such as the ankles and backs of the fingers may be treated with a CO₂ laser.

Test areas generally should be done before laser tattoo removal. Occasionally a "blush of dye" may remain at the operative site. Hypertrophic scars can occur, and thumb-web tattoos are especially prone to excessive scarring. Pastel colors are not as preferentially removed by laser as they are by dermabrasion. Old tattoos are difficult to remove and often leave a blush of pigment in the scar. There is a "cigarette paper" texture to the healed skin, and the skin remains susceptible to trauma for as long as a year after a laser procedure. Some deep tattoos cannot be removed by laser vaporization. Tattoo dots ("crazy dots") are not well removed by laser but are easily removed by punch excision. Skin color changes frequently occur after a laser operation, but these usually return to near normal within two years. Homemade tattoos are usually not more difficult to treat than professional tattoos.

No method can remove a tattoo without a scar, and patients must be aware of the complications of the tattoo removal method that is used.

KENNETH G. GROSS, MD
San Diego

REFERENCES

- Bailin PL, Ratz JL, Levine HL: Removal of tattoos by CO₂ laser. *J Dermatol Surg Oncol* 1980 Dec; 6:997-1001
Colver GB, Cherry DW, Dawber RP, et al: Tattoo removal using infra-red coagulation. *Br J Dermatol* 1985 Apr; 112:481-485
Colver GB, Dawber RP: The removal of digital tattoos. *Int J Dermatol* 1985 Nov; 24:567-568

Fisher JC: Tattoo removal: No room for high-tech solutions. Resident Staff Phys 1987 Jan 15; 33:59-60

Goldstein N (Ed): Tattoos. J Dermatol Surg Oncol (special issue) 1979 Nov; 5:821-926

Lyme Disease

LYME DISEASE, which is caused by a tick bite, initially presents with erythema chronicum migrans, fever and arthralgias. The rash spreads out from the bite, forming a raised border as it clears in the middle. Neurologic signs may develop later that can mimic viral meningitis or Bell's palsy and cardiac problems including myocarditis. The disease was first described by Steere in Lyme, Connecticut. In the West, the deer tick *Ixodes pacificus* transmits the disease. A history of an outing to a wooded area is common. The causative organism disseminated by the tick is the spirochete *Borrelia burgdorferi*.

The diagnosis can be confirmed by identifying antibodies to the *Borrelia* organism with either an immunofluorescence test or an enzyme-linked immunosorbent assay (ELISA). The fluorescent treponemal antibody absorption test may be positive in these patients. False-positive results, particularly with immunofluorescent testing, may be caused by other *Borrelia* spirochete infections, syphilis or possibly connective tissue disease. Apparent differences reported between immunofluorescent and ELISA testing for the *Borrelia* antibody is a major problem impeding advances in this area.

Antibiotic treatment with tetracycline or penicillin is usually curative for diseases caused by *B burgdorferi*.

Acrodermatitis chronica atrophicans, a cutaneous disease with both sclerotic and atrophic features, is also caused by *B burgdorferi*.

Other dermatologic diseases in which *B burgdorferi* has been suggested as a cause include localized scleroderma, lichen sclerosus et atrophicus and lymphadenosis benigna cutis. Preliminary serologic studies and possible identification of the organisms in affected tissues have been reported in these conditions but need further clarification.

DENNY L. TUFFANELLI, MD
San Francisco

REFERENCES

- Aberer E, Neumann R, Stanek G: Is localised scleroderma a *Borrelia* infection? (Letter). Lancet 1985 Aug 3; 2:278
- Burgdorfer W, Barbour AG, Hayes SF, et al: Lyme disease—A tick-borne spirochetosis? Science 1982 Jun 18; 216:1317-1319
- Steere AC, Grodzicki RL, Kornblatt AN, et al: The spirochetal etiology of Lyme disease. N Engl J Med 1983 Mar 31; 308:733-740

Ketoconazole Use in Tinea Versicolor

IN TWO STUDIES involving 62 patients, the use of ketoconazole, 400 mg in a single dose, was effective in clearing tinea versicolor, both clinically and mycologically, in 60 of the patients treated. The drug should be taken with breakfast, preferably with fruit juice. Because ketoconazole is rapidly excreted in sweat, patients should not bathe for 12 hours after taking the drug. If a patient is also taking cimetidine or β -blocker drugs, these must be withheld until two hours after taking the ketoconazole. If a patient is achlorhydric, the drug can be taken with lemon juice or a pharmacist can mix the two tablets (equivalent to 400 mg of ketoconazole) with an 8-ml aqueous solution of 0.2N hydrochloric acid. Caution the patient to take the mixture through a straw and immediately drink water to prevent damage to the teeth. Liver function tests are not indicated as hepatotoxicity is rare (1/15,000) and has never been reported in short-term therapy. Patients treated with this regimen have not noted any side effects.

Residual hypopigmentation from the fungus may persist, however, until the patient is exposed to ultraviolet light.

Ketoconazole may enhance the anticoagulant effect of coumarin-like drugs. The use of ketoconazole with rifampin, isoniazid, phenytoin and hypoglycemic agents is not recommended, nor should ketoconazole be given to pregnant or nursing women who have tinea versicolor.

Preliminary studies indicate that recurrences are less frequent than those following topical therapy. Patients prefer the ketoconazole regimen, if the disease recurs, rather than other forms of treatment.

In summary, a single 400-mg dose of ketoconazole will clear tinea versicolor, provided that the patient complies with the regimen.

PAUL H. JACOBS, MD
Stanford, California

REFERENCES

- Faergemann J, Fredriksson T: Tinea versicolor: Some new aspects on etiology, pathogenesis, and treatment. Int J Dermatol 1982 Jan-Feb; 21:8-11
- Jacobs PH: Oral Therapy in Dermatofungoses: A Step Forward. The Medicine Publishing Foundation Symposium Series, 16—Proceedings of a symposium held in Frankfurt, February 1985. Oxford, Medical Education Services Ltd, 1985. pp 119-122
- Rausch LJ, Jacobs PH: Tinea versicolor: Treatment and prophylaxis with monthly administration of ketoconazole. Cutis 1984 Nov; 34:470-471

Recent Advances in Clinical Use of Retinoids

VITAMIN A WAS FIRST USED about 40 years ago as therapy for various skin diseases and is a well-known regulator of epithelial growth and differentiation. Retinol taken in high oral dosages can cause significant toxicity problems, such as fatigue, headaches, cheilitis, anorexia, peeling of the skin, pseudotumor cerebri, papillary edema, hepatotoxicity, skeletal hyperostosis and lipid abnormalities. Because of this toxicity the use of vitamin A declined, but in the 1970s several vitamin A analogs were investigated as treatment of diseases such as acne, psoriasis, ichthyosis and other disorders of cornification. The beneficial effects of the use of 13-*cis*-retinoic acid for the treatment of lamellar ichthyosis were described in 1976 and shortly thereafter in patients suffering from severe nodular cystic acne. In subsequent studies, 13-*cis*-retinoic acid was found to be of value in generalized pustular psoriasis but was much less effective for other forms of psoriasis vulgaris. Etretinate was reported to have significant effects as therapy for severe forms of psoriasis vulgaris and was approved by the Food and Drug Administration in late 1986 as a treatment of severe recalcitrant psoriasis, exfoliative erythrodermic psoriasis and generalized pustular psoriasis. Its optimal use in severe plaque psoriasis is in combination with other forms of therapy, such as psoralen and high-intensity ultraviolet A phototherapy. Etretinate and 13-*cis*-retinoic acid have all the side effects listed above with retinol.

One additional problem of toxicity with etretinate is that it continues to be excreted for a long period after the drug therapy has been stopped. In women of child-bearing age, therefore, this drug should not be used, as the risks of teratogenicity may still be present for as long as two years or more after its use has been discontinued.

Clinical studies are currently being undertaken with the carboxylic acid derivative of etretinate, which will be known in the United States as acitretin. This drug has the efficacy and toxicity of etretinate but is much more rapidly excreted and therefore could be given to women of child-bearing age pro-