

<sup>(6)</sup>. These drugs suppress cytokine gene transcription by inhibiting calcineurin, resulting in fewer activated T cells in the skin. Both have proven to be safe and effective in adult and pediatric populations. Systemic absorption is generally not significant with either of these agents. Patients experience less burning if eczematous patches are treated initially with a corticosteroid

with transition to calcineurin inhibitors after partial clearing. Improvements tend to be steady, with progressively smaller areas requiring treatment <sup>(7)</sup>. These agents are particularly useful on the eyelids and face, in cases of refractory dermatitis, in areas prone to steroid atrophy (thus they particularly useful for the treatment of areas such as the face and intertriginous regions).



**Figure 1: A 29-year-old patient who was insensitive to topical corticosteroid therapy quickly responded to 0.1% tacrolimus ointment. (Left) Before treatment with 0.1% tacrolimus;(right) 10days after application of 0.1% tacrolimus. Histology from biopsy taken prior to treatment revealed an eczema; immunohistochemical reactivity,positive**

### **IMMUNE MODULATION OR IMMUNE SUPPRESSION?**

The difference between immune modulation and immune suppression is subtle. In AD there is an immune pathology in which skin lesions have infiltrates of inflammatory immune cells (i.e., T cells, macrophages, basophils, eosinophils). In this instance, application of a drug that blocks the activation of these cells at the site of the lesion reverses the immune pathology and thus can be considered to modify the local immune response. On the other hand, systemic immune suppression with such drugs as tacrolimus (Prograf®) and cyclosporin (Neoral®) was developed to suppress a normal immune response to the nonself antigens of an allograft. In doing so, it also suppresses normal immune responses to infectious agents and decreases immune surveillance in the protection against cancer.

Tacrolimus ointment and pimecrolimus cream are considered to be immune modulators because they target a specific immune pathology and because their action seems to be limited to the site of the immune pathology <sup>(8)</sup>.

### **References**

1. Boguniewicz M.,(2004):update on AD: insights into pathogenesis and new treatment paradigms, Allergy Asthma Proc. 25(5):279-82
2. Ehrchen J.,Sunderkotter C.,Luger T.,Steinhoff M., Hywel C. *et al*(2007): Calcineurin inhibitors for the treatment of atopic dermatitis;(17):3009-23
3. Bokrosky W. and Fitzsimmons,(2001): old , new therapies for atopic dermatitis JAM Acad Dermatol , 44:S17-27).
4. Atherton D.J., (2003): Topical corticosteroids in atopic dermatitis. BMJ; 327; 942.
5. A Remitz, H., kyllonen H., Gralund and Reitamo S., (2001): tacrolimus ointment reduces staphylococcal colonization of AD lesion (letter), J Allergy Clin immunol 107:196-197.