Deep Learning Model Augments Diagnostic Performance

Despite some success with binary tasks in the realm of diagnosis of dermatological diseases, convolutional neural network (CNN) utilization requires testing in a real clinical practice environment. Han et al. developed CNN architectures trained with more than 220,000 images reflective of 174 disease classes from Asian and Caucasian populations to examine multiclassification and binary malignancy decision performance concurrently. These deep learning algorithms proved useful for malignancy diagnosis, treatment suggestions, and classification of 134 skin diseases with accuracy similar to that of dermatologists. Because this algorithm improved the malignancy prediction sensitivity and specificity, this deep neural network may be used to empower diagnostic dermatology. See page 1753.

Cutaneous Dysbiosis in Unaffected Skinfolds of Patients with Hidradenitis Suppurativa

Dysregulated immune responses to dysbiosis in the skin are proposed to underlie the disabling chronic inflammatory disease hidradenitis suppurativa (HS). In accord with reports that pathological features of follicular hyperkeratosis, perifolliculitis, occlusion, and dilatation of the hair follicle occur in unaffected HS skinfolds, Riverain-Gillet et al. utilized culture and 16S ribosomal RNA gene sequencing techniques to investigate the microbiome in unaffected skinfolds from patients with HS and controls. These skinfolds were associated with dysbiosis that varied with respect to site and disease severity. The microbiome of clinically unaffected skinfolds in patients with HS exhibited a decrease in skin commensals and a shift toward anaerobic skin pathogens, suggesting that dysbiosis may drive preclinical low-grade inflammation in the hair follicle in HS. See pages 1688 and 1847.

Clonal Origin in Myeloid Neoplasm–Associated Sweet’s Syndrome

The neutrophilic dermatosis Sweet’s syndrome (SS), which occurs in the presence of malignancy, inflammatory disease, or drug exposure, is associated with myeloid neoplasm (MN), although the pathophysiological relationship between the two diseases is not known. Using next-generation sequencing analysis of paired hematopoietic and skin samples from patients with concomitant SS and MN, Passet et al. reported that mutations of all the major clones of MN were also present in skin samples. Furthermore, this common clonal progenitor was shared by the polymorphonuclear cells in the dermis and the malignant myeloid clone in cases where SS was present at a clinical diagnosis of MN or arose during MN treatment. See page 1873.

IL-17A Inhibitor Exerts Neutral Effect on Vascular Inflammation

Secukinumab, an IL-17A inhibitor, is an efficacious treatment option for moderate-to-severe plaque psoriasis, a chronic inflammatory skin disease also associated with an increased risk of cardiovascular disease. In a prospective, randomized, double-blind, placebo-controlled study of the impact of 52 weeks of secukinumab treatment on vascular inflammation in patients with psoriasis, Gelfand et al. demonstrated that secukinumab dramatically improved the signs and symptoms of psoriasis but did not affect aortic vascular inflammation as measured by the target-to-blood pool ratio. A similar lack of effect was noted for cardiometabolic disease biomarkers. Secukinumab, effective for psoriasis, also appears to exert a neutral effect on vascular inflammation in patients. See page 1784.

Dangers of Venous Catheters in Atopic Dermatitis Patients

In a study of Staphylococcus aureus bloodstream infection (SAB), Mathe et al. found that SAB that occurred in patients with atopic dermatitis (AD) was hospital acquired in approximately 60% of cases and more likely to stem from intravascular catheters or skin than in patients without AD. Because high levels of S. aureus colonization are characteristic of AD skin, direct superinfection of lesional skin or indirect infection through intravascular catheters plays a role in SAB development in these patients. As a result, the use of intravascular catheters should be considered only when clearly indicated in patients with AD. See page 1780.