Nailfold capillaroscopy (NVC) consists of the combination of a microscope and a digital video camera. NVC is a non-invasive, inexpensive, and reproducible imaging method used for the evaluation of structural changes in peripheral microcirculation. It is mainly used in the evaluation of Raynaud’s phenomena (RP) and for the diagnosis of systemic sclerosis (SSc) [1]. NVC acquires prognostic relevance in the global assessment of a single patient. It is useful in differentiating idiopathic RP from abnormal capillaroscopic changes, which may develop into a connective autoimmune disorder. The technique is the most valuable tool for the early diagnosis of SSc and related disorders. NVC is useful in monitoring the progression of the disease, and its predictive value of clinical complications make it a powerful tool for clinical evaluation. The inclusion of capillaroscopic abnormalities in the new classification criteria of the American College of Rheumatology/European League Against Rheumatisms (ACR/EULAR) for SSc gives a new impetus to the use and dissemination of capillaroscopy.

Three stages of capillaroscopy are associated with scleroderma pattern: recent, active, and late [2]. Figure 1A shows a normal capillaroscopy compared to Figure 1B, which shows neoangiogenetic features of vascular aspecific changes, micro-hemorrhages, and ectasia (including megacapillaries) as predominantly seen in the recent pattern. The recent pattern has a relatively preserved capillary distribution without significant devascularization. These findings are crucial for early diagnosis of SSc. In the active pattern, an increase in the number of giant capillaries (megacapillaries) and micro-hemorrhages are observed, in association with a moderate loss of capillaries and mild distortion of capillary architecture [Figure 1C]. The late pattern is characterized by a severe loss of capillaries and by extensive avascular areas, and disorganization of capillary architecture [Figure 1D]. The late pattern changes correlate with the duration of RP and diagnosis of SSc.

Capillaroscopy could be affective not only in the diagnosis and evaluation of...
severity of SSc, but also in helping to identify patients at risk of visceral involvement. Indeed, an association between the risk of serious visceral injury and recent, active, and late patterns in the stages of capillaroscopy has been reported. A higher risk in patients presenting with the late pattern has been shown [3].

NVC should be performed in all cases of undifferentiated connective tissue disease with the aim of identifying patients at risk for progression to SSc or to its spectrum diseases [4]. RP is also an initial manifestation of mixed connective tissue disease occurring in approximately 85% of patients and is part of the classification criteria for this disease [5].

Scleroderma pattern is observed in about 20–60% of patients with dermatomyositis and polymyositis, with more frequent and pronounced findings in dermatomyositis than in polymyositis. This finding correlates with the presence of RP and interstitial pulmonary involvement [6]. When RP is present in Sjögren syndrome or rheumatoid arthritis patients, capillaroscopic findings are nonspecific (i.e., presence of elongated capillaries) [Figure 1B].

Finally, several video capillaroscopic abnormalities have also been described in patients with mixed cryoglobulinemia with some suggestive correlations with the most severe manifestations of vasculitis, especially renal involvement.

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**Capsule**

**Immunization expands B cells specific to HIV-1 V3-glycan in mice and macaques**

Broadly neutralizing monoclonal antibodies protects against infection with HIV-1 in animal models, suggesting that a vaccine that elicits these antibodies would be protective in humans. However, it has not yet been possible to induce adequate serological responses by vaccination. To activate B cells that express precursors of broadly neutralizing antibodies within polyclonal repertoires, Escolano and co-authors developed an immunogen, RC1, that facilitates the recognition of the variable loop 3 (V3)-glycan patch on the envelope protein of HIV-1. RC1 conceals non-conserved immunodominant regions by the addition of glycans and/or multimerization on virus-like particles. Immunization of mice, rabbits, and mesus macaques with RC1 elicited serological responses that targeted the V3-glycan patch. Antibody cloning and cryo-electron microscopy structures of antibody-envelope complexes confirmed that immunization with RC1 expands clones of B cells that carry the anti-V3-glycan patch antibodies, which resemble precursors of human broadly neutralizing antibodies. Thus, RC1 may be a suitable priming immunogen for sequential vaccination strategies in the context of polyclonal repertoires.

**References**


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**Capsule**

**Malnutrition and dietary repair**

Childhood malnutrition is accompanied by growth stunting and immaturity of the gut microbiota. Even after therapeutic intervention with standard commercial complementary foods, children may fail to thrive. Gehrig et al. and Raman et al. monitored metabolic parameters in healthy Bangladeshi children and those recovering from severe acute malnutrition. The authors investigated the interactions between therapeutic diet, microbiota development, and growth recovery. Diets were then designed using pig and mouse models to nudge the microbiota into a mature post-weaning state that might be expected to support the growth of a child. These methods were first tested in mice inoculated with age-characteristic gut microbiota. The designed diets entrained maturation of the children’s microbiota and put their metabolic and growth profiles on a healthier trajectory.

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