Frank's Sign: A Link Between Dermatovenerology, Cardiac Pathology, and Neurology

Dear Editor,

Although some of my colleagues may find this surprising, as a neurologist, I have noticed many connections between dermatology and neurology. Neurological and dermatological signs and symptoms are common in many clinical entities, especially in the so-called phakomatoses or neurocutaneous syndromes (Von Recklinghausen's disease type 1 and 2, Bourneville-Pringle syndrome, Sturge-Weber syndrome, Von Hippel-Lindau syndrome, Louis-Bar syndrome) (1). The terms "neurodermatitis" and "neurodermatology" also confirm the above. Inspection is the basis of every clinical examination and an integral part of both dermatological and neurological propaedeutics. Therefore, I would like to remind your readers of Frank's sign, another link between dermatology and neurology. Frank's sign is a diagonal earlobe crease (DELC) that extends backwards from the tragus at a 45-degree angle across the lobule to the auricular edge of the ear (Figure 1). It has been described as a dermatological marker for atherosclerosis. Frank's sign is named after Dr. Sanders T. Frank, who observed this crease in 20 patients with coronary artery disease and published his findings in The New England Journal of Medicine in 1973 (2). Although this sign has been known for more than 50 years, it is still not routinely employed in clinical practice. Histopathological examination of DELC-positive earlobes revealed myoelastofibrosis in the arterial vessel at the base of the earlobe, indicating that DELC is not a coincidental finding but is directly related to atherosclerosis (3). Following the finding of DELC in patients with coronary artery disease, numerous studies have confirmed the presence of DELC in peripheral vascular disease as well as cerebrovascular disease. I encountered the description of this sign as a student in the textbook of Internal Medicine in 1991 (4). This sign was also the subject of research by Croatian authors. In 1998, Mirić *et al.* found that a positive Frank's sign carried a higher risk of heart attack (5,6). In 2008, Glavić et al. found a statistically significant association between Frank's sign and an increase in intima media thickness (IMT) of the common carotid artery as a surrogate marker of atherosclerosis, thus confirming the hypothesis that Frank's sign is an uncontrollable risk factor for cerebrovascular disease (such as gender or age) (7). In clinical practice, earlobe inspection should be considered an integral part of the physical examination. In the case of a positive Frank's sign, a color Doppler ultrasound examination of the neck arteries and a cardiologist's examination are recommended. The determination of Frank's sign can be used as a method of primary prevention for cardiovascular and cerebrovascular diseases.

Figure 1. Frank's sign: diagonal earlobe crease.

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