

## NAILS "OBSTRUCTING" FINGER GROWTH IN LENGTH IN PRIMARY HYPERTROPHIC OSTEOARTHROPATHY

Sir,

During the 1970 – 1996 period, we made the diagnosis of primary hypertrophic osteoarthropathy (PHO) in 76 patients, five (6.5%) women and 71 (93.5%) men<sup>1</sup>. The patients were aged 15-72 years, mean age 41.5 (SD = 10.23) years. Accordingly, they were at the age when the formation of finger clubbing was completed. They all had finger clubbing. In all patients, clinical, laboratory, scintigraphic, radiologic and other tests excluded the possible existence of secondary hypertrophic osteoarthropathy (SHO). In addition, the characteristics of nails and finger clubbing were examined in all patients. The nails were convexly curved in longitudinal and transverse direction, resembling the glass on the watch<sup>2</sup>. Some nails such as the nails of the second and fifth fingers were even more curved, also having a greater surface<sup>3</sup>. The nail of the second finger grew over the tip of the finger toward the palmar side, so that the terminal phalanx of the finger could not develop anymore. The convexity of all fingers developed from the distal interphalangeal joint (DIP) toward the free end of the nail (Fig. 1). In the development of a clubbed finger in PHO, usually in adolescence, the nail is more firmly fixed and cannot be pressed toward the surface. In SHO, the nails grow very rapidly depending on the activity of the underlying disease (e.g., bronchogenic carcinoma, mediastinal carcinoma, etc.), have a smooth and glossy surface, occasionally developing folds and white spots, particularly in the elderly. In PHO, the nails grow rapidly until adolescence, then slowly to a certain limit when they terminate their growth and acquire a definite form. The finger continues growing while the nail stops its growth earlier and develops in a wrong direction, becoming curved on the tip of the finger. Consequently, the fingers are extended, especially the terminal ends of the fingers and toes, resembling a paw or ball. DIP joints become hyperextended. These are so-called bulb forms of fingers that develop due to the 'obstructing' growth in length and swelling of the connective tissue on the finger tip. Bulb fingers rarely develop unilaterally<sup>4</sup>, and so do also changes of the nails which cause no discomforts. However, in the active stage of disease (both SHO and PHO), erythema around the nails and telangiectasia, perspiration and warmth are pronounced. Vasodilatation and enhanced blood circulation occur in the distal end of the finger, whatever the etiopathogenesis of disease (growth factor, prostaglandins, tissue hypoxia, neurogenic reflection, genetic factors, growth hormone, tumor necrosis factor, etc.). This leads to tissue swelling and growth of the terminal segment of distal phalanx until the curving nail, growing in all directions, stops the



finger growth in length<sup>5-12</sup>. That is why the finger acquires the clubbed shape. In conclusion, the nails 'obstructing' finger growth in length are an important feature of PHO.

*Professor Ivo Jajić, M.D., Ph.D.*

Department of Rheumatology,  
Physical Medicine and Rehabilitation,  
Reference Center for Inflammatory Rheumatic Diseases,  
Sestre milosrdnice University Hospital, Zagreb, Croatia

### References

1. JAJIĆ I, JAJIĆ Z. Hypertrophic osteoarthropathy. Zagreb: Medicinska knjiga, 1997:1-170.
2. FISCHER DS, SINGER DH, FELMAN SM. Clubbing – a review with emphasis on hereditary acropathy. *Medicine* 1964;43:459.
3. MATUCCI-CERINIC M, LOTTI T, JAJIĆ I et al. The clinical spectrum of pachydermatoperiostosis (primary hypertrophic osteoarthropathy). *Medicine* 1991;70:208.
4. KAHTAN S, KAHTAN N. Unilateral finger clubbing. *Lancet* 1991;338:576.
5. DICKINSON CJ, MARTIN JF. Megakaryocytes and platelet clumps as the cause of finger clubbing. *Lancet* 1987;2:1434-5.
6. BALK SD, WHITFIELD JF, YOUDALE T et al. Roles of calcium, serum, plasma and folic acid in the control of proliferation

- of normal and Rous sarcoma virus-infected chicken fibroblasts. *Proc Natl Acad Sci USA* 1993;70:675-9.
7. HUANG JS, HUANG SS, KENNEDY E et al. Platelet derived growth factor. Specific binding to target cells. *J Biol Chem* 1982;257:8130-6.
  8. LOWELL RRH. Observations on the structure of clubbed fingers. *Clin Sci* 1950;9:299-321.
  9. MATUCCI-CERINIC M, CINTI S, MARRONI M et al. Pachydermatoperiostosis (primary hypertrophic osteoarthropathy): report of a case with evidence of endothelial and connective tissue involvement. *Ann Rheum Dis* 1989;48:240-6.
  10. MATUCCI-CERINIC M, LOTTI T, JAJIĆ I et al. Cutaneous fibrinolytic activity in primary hypertrophic osteoarthropathy. *Scand J Rheumatol* 1987;10:205-12.
  11. DUPONT B, HOYER I, BORGESKOV S, NERUP J. Plasma growth hormone and hypertrophic osteoarthropathy in carcinoma of the bronchus. *Acta Med Scand* 1970;188:25-30.
  12. LEMEN RJ, GATES AJ, MATHE AA et al. Relationship among digital clubbing, disease severity and serum prostaglandins F2a and F concentration in cystic fibrosis patients. *Am Rev Respir Dis* 1978;117:639-42.