

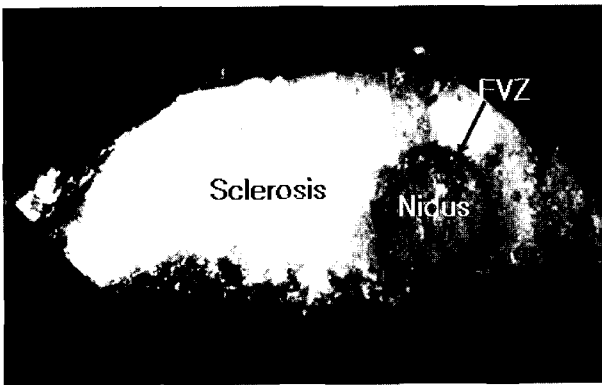
섬유혈관대의 Tc-99m 골스캔소견: 유골종의 새로운 진단징후

성애의료재단 서울 성애병원 핵의학과¹, 가톨릭대학교 의과대학 핵의학과², 임상병리학과³
박용휘¹ · 김성훈² · 최연진³

^{99m}Tc-MDP Pinhole Bone Scintigraphic Feature of Fibrovascular Zone: A New Diagnostic Sign of Osteoid Osteoma

Yong-Whee Bahk, M.D.¹, Sung-Hoon Kim, M.D.², and Yeong-jin Choi, M.D.³

¹Department of Nuclear Medicine, Sung Ae Hospital, Seoul, ²Departments of Nuclear Medicine and Radiology and ³Department of Pathology, Kangnam St. Mary's Hospital, Catholic University Medical School, Seoul, Korea



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Fig. 1. Gross specimen of nidus, fibrovascular zone and host bone sclerosis of osteoid osteoma. Note thin black rim of FVZ around the nidus surrounded by host bone sclerosis (arrow).

Osteoid osteoma is a common benign tumor. Histologically, the tumor is characterized by the presence of the nidus, fibrovascular zone (FVZ) and reactive host bone sclerosis of various intensities. A nidus consists of core meshwork of osteoid trabeculae, woven bone and osteoblastic rim and a FVZ. 1-2 mm rim, is composed of loose fibrovascular tissue and nerve fibers.¹⁻⁴⁾ As shown in Fig. 1 the nidus and

FVZ are readily identifiable on pathological specimen⁵⁾ and CT when sclerosis is not too extensive (Fig. 2 C).

Recently on pinhole bone scan, we observed a peculiar rim sign that denoted FVZ in a patient with pathologically proven osteoid osteoma. Not previously described the sign appears to be pathognomonic of osteoid osteoma, uniquely providing metabolic information. The finding was correlated with that of radiography, CT and MRI and low power light microscopy.

The patient was a 28-year-old female with intractable low back pain considered to be due to back sprain or facet joint syndrome. Started a year ago the pain was first intermittent with occasional aggravation but lately became persistent ending up in bedridden state. NSAIDs were ineffective needing nerve blocking with methylprednisolone only for temporary relief. An admission oblique radiography of the lumbar spine revealed a well-defined, round bone defect of nidus in the right inferior articular process of L4 (Fig. 2 A). The border was slightly sclerotic. Subsequent pinhole scan revealed the nidus to accumulate ^{99m}Tc-MDP intensely. Close observation revealed a 2-mm rim of lesser uptake zone encircling the nidus (Fig. 2 B). Transverse CT showed the nidus to be mineralized and rimmed with a thin ring-like capsule surrounded in turn by host bone sclerosis (Fig. 2 C). Fat saturated contrast enhanced T1 weighted imageThe nidus showed mixed signal and the rim had high signal on (Fig. 2 D). HE stain confirmed the nidus

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- Address for reprints: Yong-Whee Bahk, MD, Prof. Emeritus
Department of Nuclear Medicine, Sung Ae Hospital, 451
Shingil-1-dong, Youngdeungpo-gu, Seoul 150-960 Korea
Tel: 82-2-840-7198, Fax: 82-2-2277-8598
E-mail: ywbahk@hanmail.net

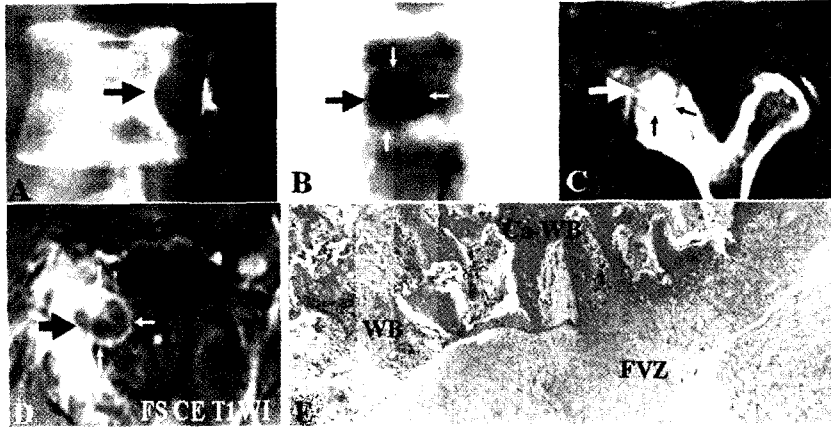


Fig. 2. Rim sign of FVZ on radiograph (A), pinhole scan (B; small white arrows), CT (C; small black arrows), MRI (D; small white arrows) and HE stain (E). FS CE T1W1 in D denote fat-suppressed, contrast-enhanced T1-weighted MR image. FVZ, WB and Ca-WB in E stand for fibrovascular zone, woven bone and calcified woven bone, respectively.

to consist of woven bone and irregularly mineralized woven bone rimmed by FVZ (Fig. 2 E).

This is considered to be the first reported case of osteoid osteoma in which FVZ was portrayed as an intermediate tracer uptake rim on pinhole scintigraph.

References

1. Picci P, Mirra JM. Osteoid osteoma. In: Bone tumors. Mirra JM. Philadelphia: Lea & Febiger, 1989.
2. Jaffe HL. Osteoid-osteoma. In: Tumors and tumorous conditions of the bones and joints. Jaffe HL. Philadelphia: Lea & Febiger, 1958.
3. O'Connell JX, Nanthakumar SS, Nielsen GP, Rosenberg AE. Osteoid osteoma: the uniquely innervated bone tumor. *Mod Pathol* 1998;11:175-80.
4. Hasegawa T, Hirose T, Sakamoto T et al. Mechanism of pain in osteoid osteomas: an immunohistochemical study. *Histopathology* 22:487-91, 1993.
5. Mirra J. Personal communication, February 2007.