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1. **Bonney G, Gilliatt RW.** Sensory nerve conduction after traction injuries of the brachial plexus. *Proc R Soc Med* 1958;51:365-7.
2. **Dawson GD, Scott JW.** The recording of nerve action potentials through skin in man. *J Neurol Neurosurg Psychiatry* 1949;12:259-67.
3. **Landi A, Copeland SA, Wynn Parry CB, Jones SJ.** The role of somatosensory evoked potentials and nerve conduction studies in the surgical management of brachial plexus injuries. *J Bone Joint Surg [Br]* 1980;62-B:492-6.

SIMPLE BONE CYSTS TREATED BY INJECTION OF AUTOLOGOUS BONE MARROW

Sir;

I read with interest the article in the November 1996 issue on simple bone cysts treated by injection of autologous bone marrow by Lokiec et al¹ because the authors attributed their success entirely to the alleged osteogenesis from the injected cells. They ignore the possibility that, in their technique, the trauma to the cyst wall may play an important, if not crucial, role in the subsidence of the lesion. This possibility, which has been mentioned in the literature at least twice,^{2,3} cannot be dismissed. The authors' technique, including, as it does, the use of a cannulated needle and a trocar, with "multiple perforations through the cyst wall" and an instruction to "break all the intralesional septa" is not "almost atraumatic". As has been suggested, it may instigate formation of new vascular channels, previously impeded, which will allow continuous drainage of the cyst.

If this is the explanation of the success of their technique, the relevance of the autologous precursor cells is questionable as has been that of the steroids now being used locally. At least neither is particularly harmful.

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1. **Lokiec F, Ezra E, Khermosh O, Wientroub S.** Simple bone cysts treated by percutaneous autologous marrow grafting. *J Bone Joint Surg [Br]* 1996;78-B:934-7.
2. **Chigira M, Malhara S, Arita S, Udagawa E.** The aetiology and treatment of simple bone cysts. *J Bone Joint Surg [Br]* 1983;65-B:633-7.
3. **Cohen J.** An essay on simple bone cysts. *Iowa Orthop J* 1988;8:56.

Sir;

We read with interest the article by Lokiec et al¹ in the November 1996 issue concerning the treatment of simple bone cysts by percutaneous autologous marrow grafting. The aetiology of simple bone cysts (SBC) is unknown. It has been suggested that they occur after trauma due to failure of absorption of an intraosseous haematoma.² Based on the electron-microscopic analysis of cyst membranes Mirra et al³ believe that the cysts represent an intraosseous synovial cyst. High levels of oxygen scavengers have been isolated⁴ in cyst fluid and implicated in the associated bone destruction.

Others believe that the cyst represents the inability of the interstitial fluid to escape from the bone due to blockage of the venous drainage system.^{5,6} Ekkernkamp, Muhr and Lies⁷ and Chigira et al⁸ have directed treatment toward decreasing the intraosseous pressure, successfully employing decompression by a cannulated screw or multiple cortical perforation.

The operative technique used by Lokiec et al also included "disrupting the lining membrane and making multiple perforations through the cyst wall".

We think that it is likely that the healing achieved by Lokiec et

al is influenced by or is the result of the multiple perforations made in the wall of the cyst.

H. W. B. SCHREUDER, MD
R. P. H. VETH, MD
Academic Hospital
Nijmegen, The Netherlands.

1. **Lokiec F, Ezra E, Khermosh O, Wientroub S.** Simple bone cysts treated by percutaneous autologous marrow grafting. *J Bone Joint Surg [Br]* 1996;78-B:934-7.
2. **Gartland JJ, Cole FL.** Modern concept in the treatment of unicameral bone cysts of the proximal humerus. *Orthop Clin North Am* 1975;6:487-98.
3. **Mirra JM, Bernard GW, Bullough PG, Johnston W, Mink G.** Cementum-like bone production in solitary bone cyst (so-called "cementum" of long bones). Report of three cases. Electron microscopic observations supporting a synovial origin to the simple bone cyst. *Clin Orthop* 1978;135:295-307.
4. **Komiya S, Tsuzuki K, Mangham DC, Sugiyama M, Inoue A.** Oxygen scavengers in simple bone cysts. *Clin Orthop* 1994;308:199-206.
5. **Ahn JI, Park JS.** Pathological fractures secondary to unicameral bone cysts. *Int Orthop* 1994;18:20-2.
6. **Cohen J.** Etiology of simple bone cyst. *J Bone Joint Surg [Am]* 1970;52-A:1493-7.
7. **Ekkernkamp A, Muhr G, Lies A.** Continuous decompression: a new method in the treatment of juvenile bone cysts. *Unfallchirurg* 1990;93:539-43.
8. **Chigira M, Shimizu T, Arita S, Watanabe H, Heshiki A.** Radiological evidence of healing of a simple bone cyst after hole drilling. *Arch Orthop Trauma Surg* 1986;105:150-3.

Author's reply:

Sir;

We appreciate very much the interesting comments and points raised by Dr Cohen and Drs Schreuder and Veth. Both letters address a similar point regarding the possible effect of multiple perforations through the cyst wall. We thank them for allowing us to explain again the technique in order to prevent misunderstandings. The cortex of the cyst is perforated only once with a thin trocar. After evacuation of the fluid by aspiration, the same needle is used to disrupt the lining membrane in the periphery of the cyst as well as to break all intralesional septa in a multilocular lesion. From the same entry point, with the same needle, we make multiple perforations through the distal cyst wall only into the medullary cavity and never in the periphery of the cyst. Multiple perforations ensure communication of the cyst cavity with the medullary space.

We have used the same method in patients who were treated in the past by steroid injections. Our results did not differ from those published in the literature, with only 50% of cysts showing complete healing while 50% of patients required more than one injection.

Our experience, compared with the injection of steroid, convinces us that our success can be directly attributed to the activity of the osteoprogenitor cells in the marrow stroma.

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CARE OF THE POLYTRAUMATISED PATIENT

Sir;

We found the review by Tscherne and Negel¹ in the September 1996 issue most informative.