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Case Report

Diagnosis of bone giant cell tumor in elderly patient: A case report of an unusual case

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ABSTRACT

Background: Giant cell tumor (GCT) of the bone in elderly patients is a very rare bone tumor.
Case presentation: Radiography of the left antebrachial revealed a lytic lesion, septated, having a soap bubble appearance in the distal epi-meta-diaphysis of the left radius, narrow transitional zone, type-IB geographic destruction, with cortical thinning, no periosteal reaction, no calcified matrix, with soft tissue involvement. MRI examination of the left antebrachial showed a lesion with partially ill-defined margins, irregular margins, in the left distal epi-meta-diaphysis, accompanied by soft tissue protrusion, which was hypointense on T1WI, iso to hyperintense on T2WI/FAT SAT which partially formed fluids level, the area of diffusion was limited on DWI. After the administration of contrast administration, improvement appeared, the lesion appeared to extend to the articular surface of the left radius bone. Histopathological examination showed the distribution and clusters of mononuclear cells, round oval nuclei, fine chromatin, the distribution of multinucleated giant cells with >10 nuclei similar to mononuclear cell nuclei. These findings were keys as giant bone tumor cells.
Discussion: A specific examination of the GTC in the elderly needs to be carried out to minimize misdiagnosis.
Conclusion: Giant cell tumor is also possible be found in elderly patients. Diagnosis is based on clinical findings, radiological examination, and confirmed by histopathology.

1. Introduction

Giant cell tumor (GCT) of bone is a common benign tumor, and it is histopathologically characterized by multinucleated giant cells against a mononuclear stromal cell background [1]., GCT accounts for 4–10% of all primary bone tumors and about 20% of all benign bone tumors. The disease is mainly found in the age range of 20–55 years, around 80% [1,2], while GCT at the age of >55 years is sporadic [3] and is estimated at only 1.6–35% based on all GCT cases reported [4]. Recent studies have stated that the management of GCT causes the economic burden and quality of life to decrease. This condition is caused by pain, disability, and decreased work productivity [5]. Based on the description above, we were interested in reporting a 62-year-old Indonesian male with GCT in the distal left radius. This case report used the 2020 surgical case report (SCARE) guidelines [6].

2. Case presentation

A 62-year-old male with a chief complaint of a lump in the left wrist for 3 months. The patient previously had a massage on the hand area. Examination results found nodules in the distal radius sinistra. Laboratory examinations showed expected results. An anterior-posterior and lateral X-ray of the left antebrachial revealed a lytic lesion, septated, forming a soap bubble appearance in the left distal epi-meta-diaphysis, narrow transitional zone, type-IB geographic destruction, with cortical thinning, no periosteal reaction, no calcified matrix, with soft tissue involvement (Fig. 1).

The patient then underwent an MRI examination of the left antebrachial. On axial sequence T2WI section showed a hypointense bulging mass involving the whole distal radius (Fig. 2a), axial sequence T2 FatSat section showed no sign of vascular encasement, but the lesion could not be separated from the surrounding muscle (Fig. 2b), fluid-fluid level of the blood component in T2WI/FatSat sequence showed secondary ABC (Fig. 3), on contrast administration (T1 + Contrast) showed

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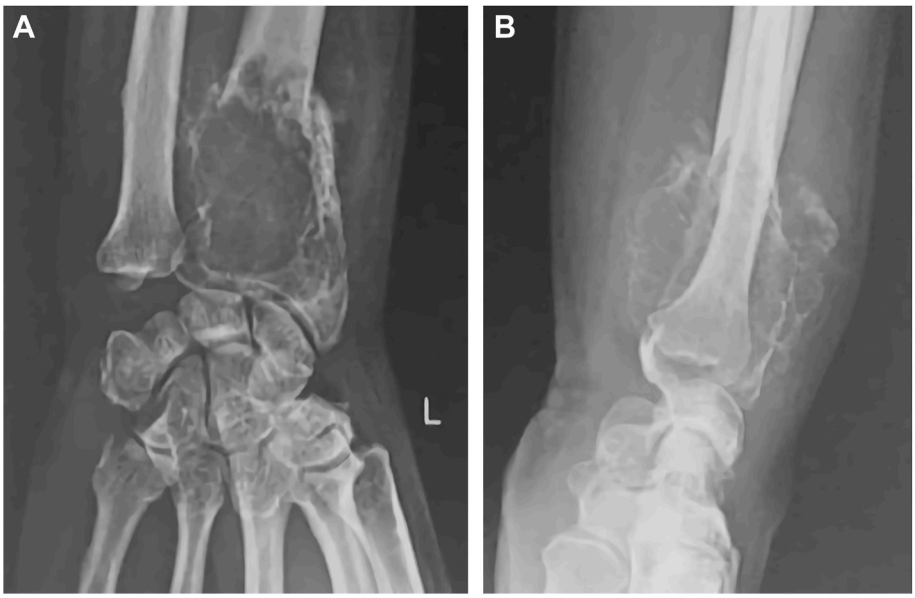

Fig. 1. Conventional radiography of left antebrachial AP/Lateral projection, showing lytic lesion, septated, forming a soap bubble appearance, narrow transitional zone, geographic IB, destruction, cortical thinning, no matrix calcification, no periosteal reaction, soft-tissue involvement.

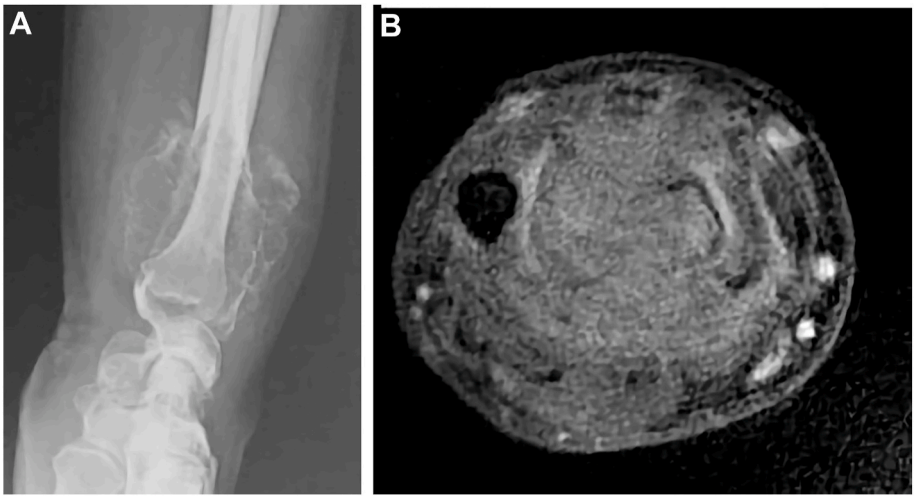

Fig. 2. a. Axial sequence onT1WI: Hypointense bulging mass involving the full radius; 2b. Axial sequence on T2 FatSat: there is no sign of vascular encasement. The lesion could not be separated from the surrounding muscle.

contrast enhancement (Fig. 4a), coronal section of T2WI sequence showed bone destruction reaching subchondral bone plate (Fig. 4b). Histopathological examination showed the distribution and clusters of mononuclear cells, round oval nuclei, fine chromatin, and scattered multinucleated giant cells with mononuclear cell nuclei (Fig. 5).

3. Discussion

Bone GCT is generally a benign tumor composed of mononuclear stromal cells and typical multinucleated giant cells that exhibit osteoclast activity. Bone GCT is a type of lesion rich in giant cells [4]. The disease mainly occurs in long bones, such as the proximal tibia, distal femur, distal radius, and proximal humerus. It can also occur in the lamellar bone or the apophysis, equivalent to the epiphysis [7]. The prevalence of GCT reaches its peak during the 3rd decade, with 80% of cases occurring between the ages of 20 and 50 years [1].

This patient, a 62-year-old male, has an unusual/rare case of bone GCT. A rare case report of giant cell tumors inpatient over 60 years old describes chromosomal imbalance or treatment options. This case illustrates that the behavior of bone GCT in the elderly differs from the lesions that occur in younger patients who are more frequently involved. First, the locations of the distributions are identical, in this case, the location at the distal radius. This is the most common site for giant cell tumors in all age groups. Second, the radiographic features of these lesions are identical to those of giant cell tumors in younger patients. The lesion is well defined and involves the epiphyseal, metaphyseal portion of the long bones. Third, the behavior of these lesions is identical to that of giant cell tumors in general. The lesions in these cases may be less aggressive than those in younger patients because there is no recurrence. Generally, the recurrence rate after curettage for giant cell tumors is between 25 and 35% [7,8].

Bone GCT in the elderly presents a diagnostic problem that is not seen more commonly in younger patients. At this age, the most common bone neoplasm is metastatic carcinoma. Although metastatic carcinomas support the axial skeleton, some carcinomas will metastasize to the ends of long bones. In addition, several carcinomas, including breast,

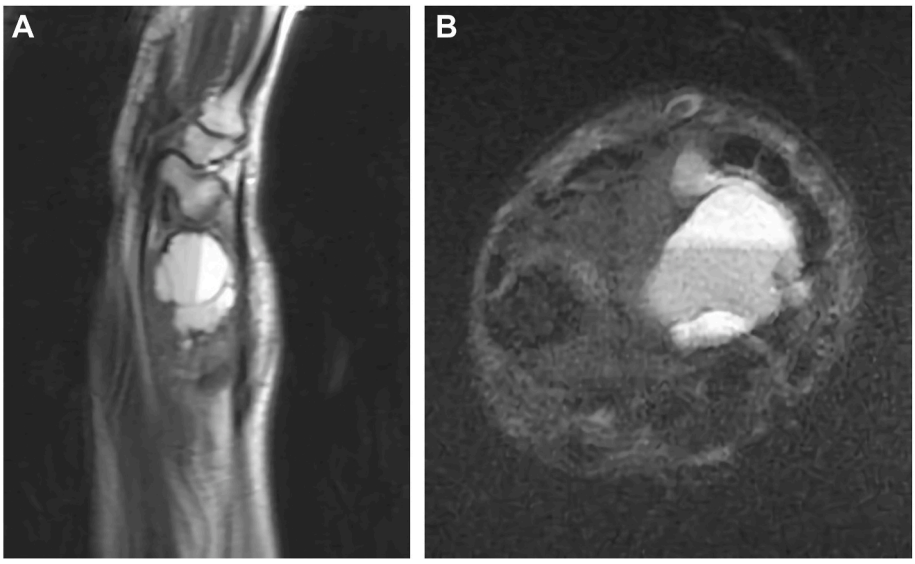

Fig. 3. a. Sagital and 3b. axial on T2 FatSat, showing the fluid level of the blood component in T2 FatSat sequences is showing secondary ABC.

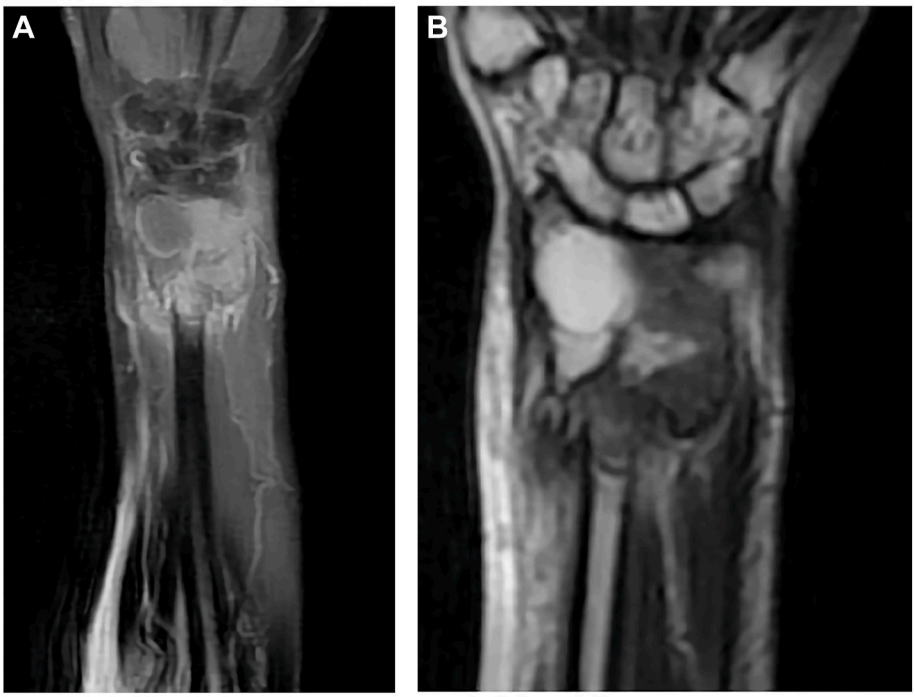

Fig. 4. a. T1 + Contrast is shows the enhancing solid mass after contrast administration; 4b. Coronal T2WI shows that the bone destruction is reaching the subchondral bone plate.

kidney, lung, and pancreas, contain large populations of osteoclast-like giant cells [9]. The differential diagnosis in younger patients differs from that in older patients. Bone GCT in the elderly has the potential to deviate from the correct diagnosis because it often occurs in younger patients [10]. This rare case requires the accuracy and caution of health workers in determining the diagnosis [11].

4. Conclusion

Bone GCT is also found in elderly patients. The diagnosis is made based on clinical findings, radiological examination, and confirmed by histopathology. Therefore, it can be inferred that the patient's age does not limit the possibility of GCT, even among the elderly.

Ethical approval

Not applicable.

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Author contribution

All authors contributed toward data analysis, drafting and revising the paper, gave final approval of the version to be published and agree to be accountable for all aspects of the work.

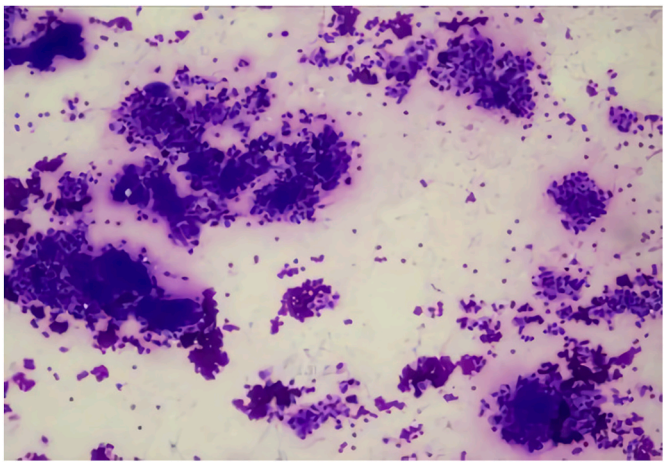

Fig. 5. Histopathology: Multinucleated giant cells with more than 10 round-oval nuclei, fine chromatin, and broad cytoplasm. With surrounding stromal cells with nuclei similar to giant cell nuclei.

Registration of research studies

Name of the registry: -.
Unique Identifying number or registration ID: -.
Hyperlink to your specific registration (must be publicly accessible and will be checked): -.

Guarantor

Rosy Setiawati.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

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Declaration of competing interest

The authors declare no conflict of interest.

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References

[1] C.J. Chakarun, D.M. Forrester, C.J. Gottsegen, D.B. Patel, E.A. White, G. R. Matcuk Jr., Giant cell tumor of bone: review, mimics, and new developments in treatment, Radiographics : Rev. Publ. Radiol. Soc. N. Am, Inc. 33 (1) (2013) 197–211, https://doi.org/10.1148/rg.331125089.
[2] A.F. Mavrogenis, V.G. Igoumenou, P.D. Megaloikonomos, G.N. Panagopoulos, P. J. Papagelopoulos, P.N. Soucacos, Giant cell tumor of bone revisited, Sicot-j. 3 (2017) 54, https://doi.org/10.1051/sicotj/2017041.
[3] M. Pujani, S. Bahadur, Z.S. Jairajpuri, S. Jetley, J. Jameel, Giant cell tumor bone in an elderly male- an unusual case misdiagnosed on MRI as a Malignant Sarcoma, Indian. J. Surg. Oncol. 6 (3) (2015) 285–287, https://doi.org/10.1007/s13193-015-0408-x.
[4] C.J. Broehm, C.Y. Inwards, A. Al-Ibraheemi, D.E. Wenger, S.M. Jenkins, L. Jin, et al., Giant cell tumor of bone in patients 55 Years and older: a study of 34 patients, Am. J. Clin. Pathol. 149 (3) (2018) 222–233, https://doi.org/10.1093/ajcp/aqx155.
[5] J. Lopez-Bastida, I. Aranda-Reneo, B. Rodríguez-Sánchez, L.M. Peña-Longobardo, X. Ye, P. Laeis, et al., Economic burden and health-related quality of life in tenosynovial giant-cell tumour patients in Europe: an observational disease registry, Orphanet J. Rare Dis. 16 (1) (2021) 294, https://doi.org/10.1186/s13023-021-01883-5.
[6] R.A. Agha, T. Franchi, C. Sohrabi, G. Mathew, A. Kerwan, The SCARE 2020 guideline: updating consensus surgical CAse REport (SCARE) guidelines, Int. J. Surg. 84 (2020) 226–230, https://doi.org/10.1016/j.ijsu.2020.10.034.
[7] K. Yamaga, S. Kuwamoto, D. Mukunoki, M. Osaki, H. Nagashima, Successful treatment with denosumab of a giant cell tumor of bone in the iliac bone of an 84-year-old man, Yonago Acta Med. 63 (3) (2020) 228–233, https://doi.org/10.33160/yam.2020.08.013.
[8] A. Puri, R. Rajalbandi, A. Gulia, Giant cell tumour of hand bones: outcomes of treatment, J. hand Surg., Eur. Vol. 46 (7) (2021) 774–780, https://doi.org/10.1177/17531934211007820.
[9] N.P. Mahajan, A. Sadar, S.P. G, A. Marfatia, S.M. Sangma, P. Kondewar, Giant cell tumor (GCT) of the third metatarsal in an elderly patient: a rare case report, J. Orthop. Case Rep. 11 (3) (2021) 29–32, https://doi.org/10.13107/jocr.2021.v11.i03.2074.
[10] E.F. McCarthy, K.L. Weber, Giant cell tumor of bone in elderly patients: a study of ten patients, Iowa Orthop. J. 29 (2009) 79–82.
[11] D. Matei, I.R. Marcu, G.L. Pătru, L. Pătru, A.C. Bighea, S. Pătru, A case of giant cell tumor of the tendon sheath in an elderly patient: diagnostic difficulties and therapeutic options, Romanian J. Morphol. Embryol = Revue roumaine de morphologie et embryologie 60 (1) (2019) 293–296.