Materials Design Analysis Reporting (MDAR) Checklist for Authors

The MDAR framework establishes a minimum set of requirements in transparent reporting applicable to studies in the life sciences (see Statement of Task: doi:10.31222/osf.io/9sm4x.). The MDAR checklist is a tool for authors, editors and others seeking to adopt the MDAR framework for transparent reporting in manuscripts and other outputs. Please refer to the MDAR Elaboration Document for additional context for the MDAR framework.

Materials

Antibodies	Yes (indicate where provided: section/paragraph)	n/a
For commercial reagents, provide supplier name, catalogue number and RRID, if available.	The concentration of bone metabolite markers (bone alkaline phosphatase [BAP], cross-linked carboxyterminal telopeptide of type I collagen [ICTP], and type I collagen cross-linked N-telopeptide [NTx]) were quantified to observe the patient's condition during treatment using BioMajesty JCA-BM6070 (JEOL Ltd., Tokyo Japan). Anti-gamma-H2AX antibody (mouse, monoclonal IgG1) was provided from Upstate (Temecula, CA, USA). Donkey anti-mouse IgG-FITC provided from Santa Cruz Biotechnology, Inc (Dallas, TX, USA).	

Cell materials	Yes (indicate where provided: section/paragraph)	n/a
Cell lines: Provide species information, strain. Provide accession number in repository **OR** supplier name, catalog number, clone number, **OR** RRID	The mice osteoblastic cell line MC3T3-E1 cell was purchased from RIKEN BioResource Center (RCB1126). This info was provided in the section of materials and methods.	
Primary cultures: Provide species, strain, sex of origin, genetic modification status.		X

Experimental animals	No (indicate where provided: section/paragraph)	n/a
Laboratory animals: Provide species, strain, sex, age, genetic modification status. Provide accession number in repository **OR** supplier name, catalog number, clone number, **OR** RRID		X
Animal observed in or captured from the field: Provide species, sex and age where possible		X
Model organisms: Provide Accession number in repository (where relevant) **OR** RRID		X

Plants and microbes	No (indicate where provided: section/paragraph)	n/a
Plants: provide species and strain, unique accession number if available, and source (including location for collected wild specimens)		X
Microbes: provide species and strain, unique accession number if available, and source		X

Human research participants	Yes (indicate where provided: section/paragraph)	n/a
Identify authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	The Committee of Medical Ethics of the Hirosaki University Graduate School of Health Sciences, Hirosaki, Japan (no. 2016–051) approved this patient study to ensure donors' welfare and privacy. This info was provided in the section of materials and methods.	
Provide statement confirming informed consent obtained from study participants.	Written informed consent was obtained after a detailed verbal explanation regarding the content of this study. The description was included consent of examination images. This info was provided in the section of materials and methods.	
Report on age and sex for all study participants.	This study was participated in four patients with bone metastasis. All patients were male and age was 75yo, 81yo, 74yo and 76yo, respectively. These information were written in table 1.	

Design

Study protocol	No (indicate where provided: section/paragraph)	n/a
For clinical trials, provide the trial registration number **OR** cite DOI in manuscript.	This study was retrospective investigation, not clinical trials.	X

Laboratory protocol	No (indicate where provided: section/paragraph)	n/a
Provide DOI or other citation details if detailed step-by-step protocols are available.		

Experimental study design (statistics details)	Yes (indicate where provided: section/paragraph)	n/a
State whether and how the following have been done**, or** if they were not carried out.		
Sample size determination	We analyzed four patients. And some basic experiments using single cell line was performed.	
Randomisation	Four patients were selected by randomization.	
Blinding		X
Inclusion/exclusion criteria	All patients who was agreed by informed consent were included for analysis.	

Sample definition and in-laboratory replication	Yes (indicate where provided: section/paragraph)	n/a
State number of times the experiment was replicated in laboratory	The single cell experiment was performed three separate times in our laboratory.	
Define whether data describe technical or biological replicates	This single cell study defines technical replication.	

Ethics	Yes (indicate where provided: section/paragraph)	n/a
Studies involving human participants: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.	The Committee of Medical Ethics of the Hirosaki University Graduate School of Health Sciences, Hirosaki, Japan (no. 2016–051) approved this patient study to ensure donors' welfare and privacy. This info was provided in the section of materials and methods.	
Studies involving experimental animals: State details of authority granting ethics approval (IRB or equivalent committee(s), provide reference number for approval.		X
Studies involving specimen and field samples: State if relevant permits obtained, provide details of authority approving study; if none were required, explain why.		X

Dual Use Research of Concern (DURC)	Yes (indicate where provided: section/paragraph)	n/a
If study is subject to dual use research of concern, state the authority granting approval and reference number for the regulatory approval		X

Analysis

Attrition	Yes (indicate where provided: section/paragraph)	n/a
State if sample or data point from the analysis is excluded, and whether the criteria for exclusion were determined and specified in advance.	The patient serum analysis was performed until day 1333. The initial data point, day 0, defines an first administration of 223-Ra.	

Statistics	Yes (indicate where provided: section/paragraph)	n/a
Describe statistical tests used and justify choice of tests.	Each serum marker data (BAP, 1CTP, NTX, and 8-OHdG) were compared to day 0. The correlation between the ratio of 8-OHdG and gamma-H2AX expression was estimated by Pearson's correlation coefficient. $P < 0.05$ was considered to indicate a statistically significant difference.	

Data Availability	Yes (indicate where provided: section/paragraph)	n/a
State whether newly created datasets are available, including protocols for access or restriction on access.		X
If data are publicly available, provide accession number in repository or DOI or URL.		X
If publicly available data are reused, provide accession number in repository or DOI or URL, where possible.		X

Code Availability	Yes (indicate where provided: section/paragraph)	n/a
For all newly generated code and software essential for replicating the main findings of the study:		
State whether the code or software is available.		X
If code is publicly available, provide accession number in repository, or DOI or URL.		X

Reporting

Adherence to community standards	Yes (indicate where provided: section/paragraph)	n/a
MDAR framework recommends adoption of discipline-specific guidelines, established and endorsed through community initiatives. Journals have their own policy about requiring specific guidelines and recommendations to complement MDAR.		
State if relevant guidelines (eg., ICMJE, MIBBI, ARRIVE) have been followed, and whether a checklist (eg., CONSORT, PRISMA, ARRIVE) is provided with the manuscript.	ICMJE guidelines were followed, as the journal follows ICMJE recommendations for publication.	

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