

Format for ANSWERING REVIEWERS

Mai 03, 2015

Dear Editor,



Please find enclosed the edited manuscript in Word format (file name: 16418-edited.doc).

Title: Feasibility of real-time MRI-guided endomyocardial biopsies: An in-vitro study

Authors: Dirk Lossnitzer, Sebastian A Seitz, Birgit Krautz, Bernhard Schnackenburg, Florian André, Grigorios Korosoglou, **Hugo A Katus**, Henning Steen

Name of Journal: *World Journal of Cardiology*

ESPS Manuscript NO: 16418

The manuscript has been improved according to the suggestions of reviewers:

1. Format has been updated
2. Formal statements were added
3. Revision has been made according to the suggestions of the reviewer

Reviewer 1:

(1) All procedures involving animals were reviewed and approved by the Institutional Animal Care and Use Committee of the Regierungspräsidium Karlsruhe Case Number 35-9185.81/G-79/12. For this study explanted porcine and bovine hearts were bought by a regional butcher and used in an in vitro experiment. Therefore only animal organs and tissue but no alive animals were handled within our institution.

A comment was added to the methods section of the manuscript.

(2) As mentioned above scanning animal tissues and organs by using a clinical scanner was approved by the national authority Regierungspräsidium, local office Karlsruhe, Germany. The development of the bioptome itself was performed by the company H+H Maslanka GmbH, Tuttlingen, Germany, which provided the bioptome and the sheath for the experiments.

(3) The size, shape and the cutting performance of the bioptome's cutter was identical to a conventional bioptome according to the manufacturers information. The bioptomes performed indeed as we are used to from our clinical routine with conventional, commercial x-ray bioptoms. Not at least the size of the obtained biopsies was appropriate for a histological examination. However since we used explanted hearts that were bought from a butcher tissue degradation was expected because of a time delay of approximately 12 hours between the slaughter of the animals and the time of the actual experiments. We therefore abandoned histological examination of the tissue quality.

A comment was added to the results section of the manuscript.

Reviewer 2:

(1) Tracking of a device or catheter by MRI can be achieved by the integration of an active coil including the required electronics which emits a signal that will then be received by the body surface coil (this has been done by R. Razavi et al. in London to perform MRI guided complex EP procedures with a decent precision). Alternatively device tracking can be achieved much easier and cheaper in a single use bioptome device by the integration of little ferromagnetic markers or ferromagnetic surface coverings which cause small signal voids within the MR image. The scanner configuration and software for real-time imaging indeed allows continuous scanning and tracking of the position of the bioptome's tip in every possible angulation of all three imaging planes (x, y, z) within space. Sequence details are listed and described in table 1.

Two comments were added to the methods section of the manuscript.

(2) "Passing" was corrected as passive at page 8 line 4 (now page 7)

(3) The shaft and the tip of the bioptome were constructed by using non-ferromagnetic metals, synthetics and ceramic. Since patents are pending for the composition of the mentioned materials as well as for the production process itself no further information were provided by the manufacturer.

A comment was added to the methods section of the manuscript.

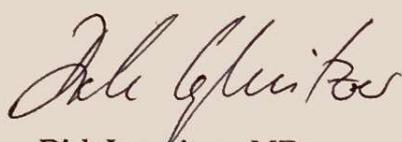
(4) The sheath is a guiding catheter and has a diameter of approximately 3.7 mm.

Two comments were added to the methods section of the manuscript.

(5) The gadolinium injected myocardial area in Figure 8b was marked with arrows and the Figure legend was edited.

Thank you again for publishing our manuscript in the *World Journal of Cardiology*.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'Dirk Lossnitzer', written in a cursive style.

Dirk Lossnitzer, MD

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