Reviewer’s report

Title: Shear wave elastography in chronic kidney disease: a pilot experience in native kidneys

Version: Date: 10 March 2015

Reviewer: Kenichiro Asano

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Review comments

The overall composition of this manuscript is concordant with standard guidelines for clinical research articles. Several concerns of the reviewer are described below:

1. With regard to tissue elastography of human organs, there are only a few reports which include discussion on ethnicity. In the 4-variable MDRD equation for calculation of eGFR, a coefficient is supplemented for women and people of black race origin, respectively, to modify the effect of innate muscle mass volume. The reason why the Hispanic cohort was set separately in this study should be explained. (Major Compulsory Revision)

2. In reference 13, the description on the relationship between fibrosis and tissue stiffness in the kidneys is derived from studies which were performed under a condition with no blood circulation. One of the major problems for discussion is that whether the results of elastography which were obtained in the kidneys without blood flow are truly applicable to the kidneys in vivo. Although this issue is yet to be clarified, there are two articles which imply a larger effect of blood flow on kidney stiffness in vivo (1. Gennisson JL, et al., Ultrasound Med Biol 2012, 38:1559-1567. 2. Asano et al., J Ultrasound Med 2014, 33:793-801.). (Discretionary Revision)

3. It is a little confusing that diabetes and hypertension are included in both the Cause of CKD and Other Medical History categories in Table 1. Did the author intentionally make the Diabetes/Hypertension cohort because it is frequently hard to distinguish the main cause of renal tissue damage in diabetic patients who are complicated with hypertension? Is the gout category in Table 1 defined as gouty attacks or hyperuricemia? (Mamor Compulsory Revision)

4. Shear wave elastography was performed by a single radiologist. This should be included in the limitations of this study since inter-observer variance was not verified. The labels of the attached figures are inconsistent with those in figure legends. (Minor Essential Revision)

5. In cases of chronic liver disease, the non-invasive evaluation of tissue fibrosis has a clinical advantage for determining risk of developing hepatocellular carcinoma and esophageal varices. In cases of CKD, however, the evaluation of
tissue fibrosis has a smaller significance. The risk or severity of harmful events which occur in CKD can be evaluated by evaluating blood and urine samples, chest X-ray, and other methods which are used in daily practice. Even though the degree of interstitial damage is evaluated in kidney biopsy specimens, the main reason to perform this invasive examination is the identification of the primary disease which caused CKD excluding those who have renal allografts. Unfortunately, studies which were performed on shear wave elastography in the kidneys remain experimental. Application of this non-invasive method for CKD patients and interpretation of the test results should be considered carefully after reviewing future studies.(Discretionary Revision)

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.