Reviewer's report

Title: Glucosamine and chondroitin sulfate supplementation to treat symptomatic disc degeneration; Biochemical rationale and case report

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Reviewer: Mauro Alini

Level of interest: A paper whose findings are important to those with closely related research interests

Advice on publication: Accept after discretionary revisions

Comments

The present manuscript reports about the potential therapeutical use of glucosamine and chondroitin sulfate on intervertebral disc degeneration. The clinical (T2-weighted MRI) results presented are based on a single patient, and, as acknowledged by the authors them self, the scientific reliability and clinical significance of this case report is very weak. One could argue that the reduced protrusion of the disc could have occurred independently of the glucosamine/CS oral intake, and that the increased MRI signal observed at 2 years post-treatment may be due to the MRI machine variability/reproducibility, or to the diurnal variation of the disc water content (have the two measurements been taken at the same time of the day?).

If, however, one takes in consideration the reassessment presently occurring within the scientific and clinical communities about the role that glucosamine/CS and its derivatives may play in osteoarthritis, this case report has a scientific merit: it describes, for the first time, a potential beneficial effect of these nutraceuticals on intervertebral disc degeneration. Considering that disc degeneration is the most widely supported and intensely investigated mechanisms for low back pain, and the present surgical treatments remain a challenge for the surgeon, the possibility, although still speculative and yet to be proven, to slow down disc degeneration by a simple pill is of great clinical and social interest.

I would like to see this report published, hoping that it will create enough interest within the scientific community to move quickly towards the planning of a clinical trail, investigating the effect of glucosamine/CS on intervertebral disc degeneration, as it is presently in the preparation phase at NIH for osteoarthritis.

For more information see:
http://www.clinicaltrials.gov/ct/gui/show/NCT00032890;jsessionid=CD9DF8239E15545F20B120E9B!

As well:
http://www.arthritisnetwork.ca/products_and_services/innovations.asp

Minor Points:

Last sentence on page 2: I think that there are several biochemical reasons explaining why
glucosamine/CS may have positive effects on cartilage formation (also partially listed in the last section by the authors). What it may not be exactly clear is the biochemical/chemical mechanism. I would rephrase this last sentence.

Methods: The MRI sequences used should be described.

Subtitle on page 6: I would change the word cartilage with intervertebral disc.

In the same section, first paragraph, last sentence: the word resynthesis should be changed with de novo synthesis or newly synthesized proteins. Same on page 8, third line down from the top.

Section starting on page 6: I would restructure this section (biochemical and physiological....). In particular, I would integrate the last paragraph (Chondroitin sulfate (CS) is a repeating ...) in the first.

**Competing interests:**

None declared.