Reviewer's report

Title: A systematic review of the etiopathogenesis of Kienbock's disease and a critical appraisal of its recognition as an occupational disease

Version: 1 Date: 11 June 2012

Reviewer: simon dagenais

Reviewer's report:

Summary
This manuscript reports on a systematic review examining evidence supporting a causal association between occupational exposure to hand-arm vibration and Kienbock's disease.

General comments
This manuscript reports on an interesting and perhaps controversial topic that is likely of interest to clinicians, employers, patients, and policy makers, i.e. possible role of occupational exposure to KD. Classification of a condition as work-related can have a substantial impact on a variety of factors, including compensation, job modification, healthcare utilization, and prognosis. However, it can be very challenging to determine that a causal relationship is in fact present, particularly when there is a delay between exposure and clinical manifestation.

The authors have chosen to conduct a systematic review, which is an appropriate study design given the need to examine and synthesize all available scientific evidence. The authors have chosen to examine this evidence using a framework proposed by Sir Bradford Hill to determine the possible work-relatedness of health conditions. However, the methodology developed by the authors to interpret evidence using this framework is somewhat unclear, and it is difficult to determine if their conclusions are in fact supported by the evidence uncovered.

As presented, the manuscript does not incorporate any of the actual findings in the text, relegating all results to the appendix. This makes it challenging for readers to understand why authors can dismiss some of the different aspects related to causation in only 1 sentence. It would be much more informative for authors to also describe summary findings within the text.

Authors also need to explain their methods in more detail, as it is unclear how they assessed and synthesized evidence to determine if certain aspects were met. Such methods should address, for example, the proportion of studies that would need to have similar findings in order to determine if consistency was present, etc.

Another aspect that needs to be refined is related to study quality, distinguishing between reporting quality and methodological quality. If authors found 10 studies
on a certain aspect, and only 5 of them were considered of high quality, would those be “neutralized” by 5 low quality studies? In other words, how does study quality get incorporated into synthesis of evidence?

Authors should also be aware that Bradford Hill did not propose a list of criteria that needed to be present in order to determine causality, as represented in this manuscript. Rather, he proposed a framework to evaluate different aspects, viewpoints, or characteristics to determine the possible relationship between exposure A and disease B in order to inform the clinical practice of occupational health and policy decisions. In his own words:

“What I do not believe - and this has been suggested - is that we can usefully lay down some hard-and-fast rules of evidence that must be obeyed before we accept cause and effect. None of my nine viewpoints can bring indisputable evidence for or against the cause and effect hypothesis and none can be required as a sine qua non.”

Authors should respect this original intention and approach the topic in a much more nuanced manner. The overall tone of the manuscript is much too rigid when dealing with a topic that requires balance, awareness of limitations, and acknowledgement of the difficulties surrounding determining causation. Other specific comments are made below.

Specific comments

Abstract
Search ends January 2012 – search is 5 months old already and will need to be updated before publication.
Specify levels of evidence presented
Avoid using term Bradford Hill “criteria”, which gives a false impression of their use
Define “evidence level IV”
How was the “quality” of the cohort studies assessed?
How did authors determine that the “discussed hypotheses are not fulfilled”?
What are the “criteria of the International Labour Organization”?

Introduction
Page 4, Paragraph 1
(KD) should be in parentheses after “Kleinbock’s disease”
Remove subsequent written out words “Kleinbock’s disease” and use abbreviation
How does the true etiology remain poorly understood?
Last sentence needs reference

Page 4, Paragraph 2
First sentence needs reference
In last sentence – explain units of exposure dose

Page 4, Paragraph 3
First sentence needs reference.
Define “sufficient probability”.

Page 4, Paragraph 4
Again, “criteria” not the right word. Framework?
Add comma after “Germany”

Page 4, Paragraph 5
Define “scientifically proven”.

Source of funding – what was the source? Did authors do this work for free?

Methods
Page 5, Paragraph 1 (first full paragraph)
Which Cochrane database was used?

Page 5, Paragraph 2
If only full text articles were included, what was excluded?
How was screening performed?

Page 5, Paragraph 3
States 215 articles – figure 1 says “214”
Third point – author’s judgment if discussed factors were linked – how was that determined?
Remove comma after “Studies” in 2nd last sentence
Add comma after “factors” in same sentence

Page 5, Paragraph 4
Again, “criteria” – framework?
What about controversies in using Bradford Hill? Is it “widely accepted”

Results
Page 5/6-, Paragraph 5
Is there a difference here between case series and cohorts?
“At least one of these 57 hypotheses…”. This sentence is unclear.
“Irrelevant” is a strong word – rephrase.

Page 6, Paragraph 1
Add comma after “Further”
Fisher’s Exact Test – what was comparator?

Strength of Association
Paragraph 1
“large enough number” – what is that number?

Paragraph 2
Why is odds ratio of 2 important?

Consistency:
Use “KD” instead of writing it out
Remove word “any” before “validity”
“… only 35% of published…” – number is irrelevant
Last sentence “10%” – so a higher percentage supports an association?

Specificity
Paragraph 2
Does hand-arm vibration cause other diseases?

Temporality
“Negative UV is the only hypothesis that meets the criterion of temporality” – why? Explain.
Last sentence – what does this mean?

Biological gradient
Did any studies discuss dose-response?

Experimental evidence
After 2007 fix punctuation
Last sentence – not if all other factors change (awareness, diagnostic criteria)

Analogy
What about other conditions related to exposure to vibration?

Discussion
Page 9, paragraph 1
“selection bias” – how is that related to sensitivity/specificity and resolution

Page 9, Paragraph 1
Add “s” to represent in second last sentence

Page 9, Paragraph 4
How were 98% and 95% determined?
Conclusion
Explain “in dubio pro reo”
Last sentence – “clinical study” – does author mean to say multiple studies?

Recommendation
As written, the manuscript is not suitable for publication. With revisions, it may be possible to consider this manuscript for publication in BMC Musculoskeletal Disorders.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

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

Declaration of competing interests:
I was part of a research team that received a grant from WorkSafe BC to conduct a systematic review assessing the causality of physical activities at work and low back pain. WorkSafe BC is the provincial occupational health regulator in British Columbia, Canada. I do not believe this constitutes a conflict with this manuscript.