June 06, 2012

Re: Imaging research and coronary artery disease.

The abstract given (Nuclear Medicine Communications . 33(1): 14-20, January 2012. doi:).1097/MNM.0b013e32834c187e) of the paper was never designed to determine if fluoride is a cause of or is involved in coronary artery disease. To quote this as that is not only a misunderstanding of the science, it is a complete misunderstanding of the entire hypothesis of the study itself. Currently, there are great attempts to determine what coronary plaques (narrowing in the arteries to the heart) are responsible for heart attacks. Most people outside the medical community assume that a 90% narrowing of the coronary arteries leads to a heart attack; this is actually false. We know this from reviewing patients that had coronary artery exams and then had heart attacks in the following days/weeks. Actually, the narrowed areas that have active inflammation cause an inflammatory reaction and eventually a clot which leads to a heart attack (myocardial infarction). We don't know which plaques have active inflammation, but hope to determine this with a test.

The study was designed to determine if FDG (fludeoxyglucose-F18), a radiopharmaceutical used in PET scans, actually has increased uptake in the plaques that eventually cause heart attacks. FDG has a radioactive fluoride isotope, F18, which is fluoride with extra nucleons that emit radiation. The fluoride has nothing to do with its activity in the body, the sugar it is attached to determines where it is taken up (note the name fluDEOXYGLUCOSE). Interestingly, areas of inflammation, infection and cancer take up the FDG sugar avidy. This is why patients get PET scans and receive FDG immediately before the scan. After the FDG sugar is taken up it emits the radiation from the F18 that it is attached to, this is then detected by the PET

scan as a hot spot on the body scan. The fluoride is only attached to the sugar to give off the radioactive marker, the sugar is the molecule that is taken up by the body and metabolized.

This is of considerable interest because if we could detect which plaques in the arteries have active inflammation (by uptake on a PET scan) then it is possible we could determine if a patient was at increased risk for a heart attack without an invasive test. This study was simply stating that FDG is taken up in the coronary arteries of patients that eventually have heart attacks. The FDG is taken up by these plaques because they are inflammatory and use the sugar in FDG, the fluoride has no factor in this uptake. In addition, this study was never stating fluoride causes the stenosis, it states that FDG IS TAKEN UP BY ARTERIES THAT HAVE PLAQUES IN PATIENTS WITH A RISK FOR A HEART ATTACK.

F18 is not a naturally occuring compound, it is man-made in special generators scattered throughout the US. We use it for PET scans because it is stable long enough to be transported to the location of the PET scan, injected into the patient but then breaks down rapidly. Other radioactive isotopes are also attached to molecules used such as Technitium-99(tc99) or Nitrogen-14 (N14). The fluoride in FDG is only attached to emit radiation and has no effect on its binding to tumors/stenosis in arteries or infection.

If you would like to speak to someone that is actually educated in this matter, I would be happy to discuss it. It is obvious to me that whoever decided to use this abstract as an excuse to condemn Fluoride supplementation has no clue what they are quoting or what FDG actually is. Simply searching for studies on Fluoride and misquoting the conclusion is not only ignorance, it is lying.

Sincerely,

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