Journal Club Summary December 21, 2011 – Radiation Risk

Summarizing this journal club is both easy and complicated.

Easy:

- We order A LOT of CTs. We order way more CTs than we ever used to.
- We order them for things we didn’t used to order them for. CT’s come at a “cost” of radiation (in addition to other “costs”… e.g. money and time).
- We think more radiation is worse than less radiation.
- Trauma surgeons and emergency physicians have a different mind-set regarding what constitutes “allowable misses” in the evaluation of a trauma patient.
- Cancer is a common disease and has multifactorial etiologies that are not entirely understood.
- The “linear no threshold” model of radiation says that every single incremental dose of radiation you receive will increase your chances of getting cancer. This model comes from Hiroshima data.

Complicated:

- Regarding radiation, the “linear no threshold” model may not be the most applicable model to apply to diagnostic radiation.
- The body is able to repair radiation damage when it is given in small doses over time…there is even some literature Tom Peredy presented that holds that…wait for it…” radiation that does not kill you will make you stronger” (aka Hormesis). This theory holds that radiation can induce better DNA damage repair, stimulate an immune response, and help remove damaged cells via apoptosis.

My summary: We do not have all the facts re the true “costs” of rampant CT usage. There is no doubt that we are using it a lot (and a lot more than we used to). Traditional medical thinking says that this increased usage will become manifest in the future as an increased number of cancers. What the true number of cancers caused by diagnostic radiation will be is unknown (and depends on many factors)...and the total number of cancers caused by diagnostic radiation will be only a tiny fraction of those expected in the general population. Regardless, it is important to think about these “costs”, understand there is (probably) no free lunch regarding ionizing radiation and, as with all medical interventions, weigh the risks and the benefits for the individual patient.

ADP