Radiopharmaceuticals for Bone Metastases

As a follow-up to my discussion of the role of radiation in treating bone mets, I also wanted to cover another option that is rarely used for lung cancer but may be an attractive consideration for particular patients with extensive bone involvement. In addition to external beam radiation, or XRT, for focal treatment of 1-2 bony metastatic foci at a time, it is also possible for radiation oncologists to treat multiple metastatic sites at one time by infusing a radioisotope like strontium or samarium. These are minerals that include a radioactive isotope that is infused through an IV, like chemotherapy. From there, it goes through the bloodstream and homes to bone, particularly to metastatic regions. It’s similar to a bone scan, except that it’s not just showing where metastases are, but delivering radiation to the sites that would light up on the scan. This can kill tumor cells in the bone and lead to improvement in pain from bone metastases. In fact, pain has been reported to be relieved in more than 80% of patients treated with radiopharmaceuticals (another term for radioisotope therapy for bone metastases) (summary article abstract here); however, the trials of these agents have generally included very few patients with lung cancer, so it’s hard to interpret whether these numbers apply readily to lung cancer patients.

In real practice, however, I have only very rarely had patients for whom infused radioisotope treatment has been considered. This is because most of my patients have not had widely diffuse bone metastases, but rather a few areas causing pain, spread out over time. In contrast, the radioisotope approach is most well suited for patients with a large number of painful bone metastases all at the same time, which is most commonly seen in prostate cancer, quite a bit less common in lung cancer. The other concern is that the primary side effect of radioisotope therapy is a risk of prolonged low blood counts, which can make it more challenging and even sometimes unsafe/infeasible to administer further chemotherapy afterward.

For a patient with a wide range of bone metastases all at the same time, especially one who may not planning to receive more standard chemo later, an approach like a radiopharmaceutical injection may be a good choice to know about. Next well cover some surgical interventions and when they might be most appropriate.