

Exciting technological developments

Flash

How would you like to have a single radiation treatment that lasts for less than one second and then be finished, with your cancer obliterated? That now seems possible with the discovery of flash technology. Previously, we logically presumed that the more radiation you get, the more damage it will do to healthy tissue. In my case, treatments were 2 Gy stretched out for almost eight weeks, five per week, to give the healthy tissue time to recover between each treatment.

But what if we gave a single dose with the same total amount of radiation, be it 60Gy or 80Gy or even 140Gy? Will morbidity increase? No! In fact, such a flash of high radiation produces surprisingly little damage. In mice with leukemia, 60% survived after a single huge hit of radiation. Similarly, when treating the lungs, there was less fibrosis and better elasticity to the tissue, closely resembling the control tissue that received no dose at all.

What is especially important to realize is that flash can only be done with proton therapy. Because traditional x-rays exit through the whole body, such high doses would be deadly. But with proton therapy, it is deadly to the cancer.

SPArc

There are x-ray modalities in which the radiation is beamed from a number of directions, even up to 360 degrees. Now, the proton center in Beaumont, Michigan and equipment manufacturer IBA are experimenting with beaming protons from a turning gantry.

It has been a challenge to predict or determine exactly where the protons will stop. So when beamed from one direction, the furthest area may be a bit off. SPARc appears to increase the degree of precision by hitting that distal area from a different angle, where the edges are sharper.

With both of these technologies, the strengths of proton therapy, in damaging less tissue and being more precise, are enhanced even more. Eat your heart out x-rays.

Pace of proton expansion slows

Currently: 31 centers opened, 15 planned or under construction. (See: www.proton-therapy-centers.com.)

It irks me that the extraordinary potential of proton therapy continues to be delayed and thwarted by undue criticism, slow acceptance, and lack of insurance coverage. Someday protons will prevail, but there have been some bumps in the road. The high point of development seems to have been 2015. Since then, some centers have not had the predicted volume of business they predicted, and so are not as profitable as projected. Several centers have gone through financial reorganization, bankruptcy, and new ownership (but none have closed). This has led to caution on the part of those hoping to have their own center.

Without exception it has been the large, four- and five-room centers developed at costs ranging as high as \$200 million that have run into difficulty. The single-room centers are working to capacity in most cases. So for the past two years, orders for new centers have been almost exclusively for single-room smaller sized units. Hence the total number of treatment rooms being built has decreased. The exception is the Mayo Clinic, which plans to build a \$233MM center in Jacksonville as large as its other two centers (Phoenix, Rochester). It raises all cash for the centers, thus having no mortgage or burden of debt. As a result, they charge the same for proton therapy as for x-rays. Your insurance company might be willing to pay for that.

Current books

I have reduced by books to two. Each is in full color with many illustrations, each is available in print or electronic format. If you download a free Kindle app on your computer, you can see the book in full color, even if your Kindle is black-and-white. The books are:

Best Prostate Cancer Treatment: Proton Beam Therapy

Proton Therapy: Revolutionary Treatment for 80% of ALL Cancers