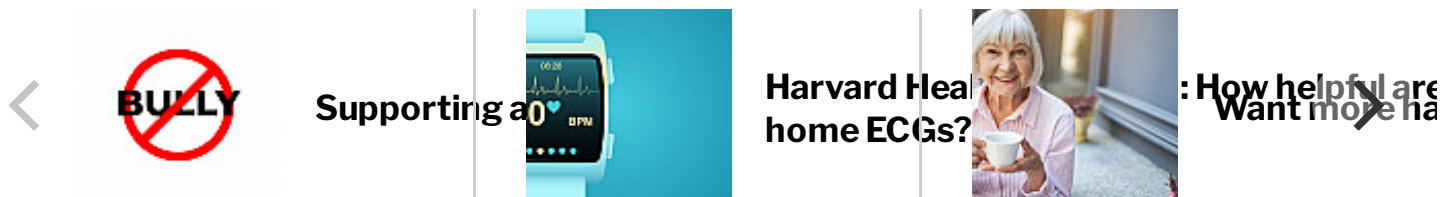




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MEN'S HEALTH

Lifestyle therapy for prostate cancer: Does it work?

July 01, 2007


Prostate cancer is the most common internal malignancy in American men; it's second only to lung cancer among the leading causes of male cancer deaths. That makes it an urgent problem, and it is finally getting the scientific respect it deserves. Still, despite thorough investigations that have yielded major advances, many aspects of the disease remain unknown.

One area of uncertainty is the cause of prostate cancer. Genetics certainly play an important role, but heredity cannot explain most cases. Lifestyle factors have also been implicated; the leading candidate is diet. A high consumption of saturated fat from animal sources is linked to an increased risk of prostate cancer, while whole grains, tomatoes, some vegetables, fish, and soy appear protective. Although the data

are less complete, red wine may be protective, while a very high consumption of calcium may be harmful. Some studies also implicate *alpha-linolenic acid*, the omega-3 fat in flaxseeds and canola oil, as a risk factor. Other lifestyle elements that have been linked to the disease include obesity, lack of exercise, and heavy smoking and drinking.

Another area of uncertainty is the best treatment. At one extreme, the evidence favors surgery for men with moderate- to high-grade tumors, especially if they are younger than 65 and are otherwise healthy. At the other extreme, men with low-grade tumors might be best served by watchful waiting, particularly if they are older than 75 or have illnesses that limit their life expectancy to 10 years or fewer. But many men with early, localized prostate cancer fall between these extremes, and doctors don't know which of them would be best served by active surveillance (deferred treatment with close observation), surgery, radiation, androgen deprivation, or a combination of therapies.

Faced with these uncertainties, it is not surprising that up to 73% of men with prostate cancer take nonprescription supplements, and smaller numbers use diet, exercise, or both in the hope of improving their outcome. Most of these men also receive conventional therapy, but a few depend on lifestyle alone.



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The appeal of lifestyle therapy is obvious – but does it work? Experts don't know, though a study raises hope that it may have a beneficial impact.

Designing a trial

Scientists from five American research centers joined forces to study lifestyle therapy for prostate cancer. The trial, conducted in San Francisco, was headed by Dr. Dean Ornish, a nutrition expert, and Dr. Peter Carroll, a noted urologist.

The first challenge was to identify patients who were medically and ethically

appropriate for the study. Only men who had already decided against active conventional therapy were eligible. All the men had newly diagnosed low-grade to moderate-grade prostate cancers (*Gleason score*, less than 7) that were localized to the gland (*stage T1 or T2*). All the men had elevated blood PSA levels of 4 to 10 nanograms per milliliter (ng/ml); none had already made major lifestyle changes, and none was abusing alcohol, tobacco, or drugs. After giving informed consent, 93 men enrolled in the trial; 44 were randomly assigned to the lifestyle therapy group, 49 to the untreated control group. At the start of the trial, the two groups were similar in age, weight, marital status, cholesterol levels, testosterone levels, PSA levels, and in Gleason scores (which predict the likely aggressiveness of prostate cancer cells).

The next challenge was to design a program that was intensive but sustainable. It included four elements:

- *Diet.* Based on Dr. Ornish's ultra-low-fat vegan diet that is sometimes used for heart disease, the regimen provided less than 10% of calories from fat and contained only trace amounts of cholesterol. The menu consisted mainly of fruits, vegetables, whole grain products, legumes, and soy products.
- *Supplements.* Each man took 58 grams of powdered soy protein, 3 grams of fish oil, 400 IU of vitamin E, 2 grams of vitamin C, and 200 micrograms of selenium every day.
- *Exercise.* The men walked for 30 minutes at a moderate pace six days a week.
- *Stress reduction.* The men performed yoga-based stretching, breathing, meditation, and relaxation exercises for a total of an hour a day.

The third challenge was to measure the effect of the program. Two techniques were used. The main standard was the blood PSA level. The second was the effect of each man's blood serum on the growth of *LNCaP cells*, a standard line of human prostate cancer cells grown in tissue culture.

Results

The trial lasted one year. Three members of the lifestyle treatment group dropped out because the program was too arduous, but none left because they required conventional therapy. Six members of the control group required conventional therapy during the year because of the progression of their disease, indicated by rising PSA levels (4 patients) or MRI images that showed tumor enlargement (2 patients).

Initially, the treatment and control groups had identical PSA levels, which averaged 6.3 ng/ml. At the end of the year, a small but significant difference was evident. The average PSA in the intensive lifestyle group fell to 6 ng/ml whereas the average PSA in the untreated men rose to 6.7 ng/ml. And tests of how the men's blood affected the growth of prostate cancer cells showed similar changes. Blood samples from the lifestyle treatment group inhibited prostate cancer cell growth by 70%, while samples from the control group inhibited growth by only 9%.

Limitations

The intensive lifestyle study did not answer the \$64,000 question: Can this program improve a man's outlook? Since all the men had early-stage, less aggressive tumors, the cancers would be unlikely to grow fast enough to demonstrate clinical differences in just a year. The scientists are continuing to track the men to see if other differences in symptoms or survival emerge over time. After just a year, though, the trends in PSA levels and cancer cell growth inhibition raise hope that lifestyle treatment may prove helpful. The fact that six of the untreated men, but none of the men who underwent lifestyle changes, required conventional treatment within the first year is another hint that intensive lifestyle treatment may be clinically beneficial.

If this treatment does help, what elements made the difference? Since all the treated men engaged in an intensive program of diet, supplements, exercise, and stress

reduction, it is not possible to say how much each part contributed or if milder interventions would have also worked. It's an important question. The intensive program might prove too difficult for many patients. True, only three men quit the lifestyle regimen, but the trial provided regular counseling by nurses and nutritionists to promote compliance.

Finally, if lifestyle therapy does prove clinically useful, doctors will want to know how it works. The San Francisco study does not explain the mechanism of action. Since testosterone levels did not change, hormones are unlikely to have played a role. Lifestyle therapy did produce an average weight loss of 10 pounds; since obesity is a prostate cancer risk factor, weight loss could play some role. Cholesterol levels also declined in this group, but there is no known link between cholesterol and prostate cancer.

Other investigations

Although the intensive lifestyle trial was careful and scientifically rigorous, it is only one study. But other investigations, though smaller and shorter, tend to support the possibility that lifestyle changes may slow the growth of prostate cancer cells. Here are some examples.

- A four-month 2001 study of 10 men with recurrent prostate cancer reported that a low-fat, plant-based diet combined with stress reduction appeared to slow the rise in PSA levels.
- A 2001 study of 13 overweight men reported that an 11-day regimen of a low-fat, high-fiber diet plus exercise improved the ability of blood samples to inhibit the growth of LNCaP prostate cancer cells.
- A 2003 study of 34 healthy men reported that blood samples from men who exercised regularly and from men who followed a low-fat, high-fiber diet slowed the growth of LNCaP prostate cancer cells, but blood from sedentary men

following typical American diets did not. Further experiments suggested that diet and exercise may exert their effect in a similar way, by reducing levels of *insulin-like growth factor-1* (IGF-1).

- A 2003 study of 12 men who exercised regularly and 10 sedentary men found that blood from the exercisers had lower levels of IGF-1 and was better able to reduce the growth of LNCaP prostate cancer cells. Additional experiments suggested that exercise may act in part by increasing a protein called *p53*, which protects cells from the effects of damaged DNA.
- A 2004 Harvard study of 675 men with treated prostate cancer linked a high consumption of fish with a reduced risk of recurrent or progressive cancer.
- A 2005 study of 49 men with rising PSAs after surgery or radiation treatment suggested that soy-based dietary supplements might slow the rise in PSA levels.
- A 2006 study of 46 men who had rising PSAs after surgery or radiation treatment for early prostate cancer reported that pomegranate juice slowed the rise in PSA levels.
- A 2006 Harvard study of 1,202 men with localized prostate cancer suggested that the consumption of fish and tomato sauce may offer some protection against disease progression.
- A 2006 study of 14 men with recurrent prostate cancer suggested that a plant-based diet and stress reduction might slow the rise in PSA levels.

Supplements to shun

Supplements have obvious appeal. Remember, though, that they are not subject to FDA oversight, and there is no assurance that they contain what they claim or that they are pure, safe, and effective. Supplements can have side effects, and they can interact with conventional medication. If supplements appeal to you, be sure to discuss them with your doctor; never use them as a substitute for good medical care.

Some supplements are best avoided. Although the helpful ingredient in tomatoes appears to be lycopene, an antioxidant in the carotene family, a 2006 study of 36 patients with recurrent prostate cancer found no benefit from lycopene supplements. And since antioxidants appear to blunt the effect of radiotherapy (and possibly chemotherapy), men should avoid them during these treatments.

Perspective

A large body of evidence suggests that lifestyle factors have a powerful influence on a man's risk of prostate cancer. The intensive lifestyle study is a provocative addition to the small body of evidence that raises hope that these changes may improve the outlook of men who already have the disease. Much more research is needed before lifestyle therapy can be recommended clinically. And even if these changes prove beneficial, they will add to but not replace conventional treatment.

Men with prostate cancer may choose not to wait until science catches up with their disease. Since regular exercise, stress reduction, and a low-fat, high-fiber, plant-based diet are good for general health, they will make a reasonable addition to any prostate cancer program. The same is true for vitamin D. Since supplements of fish oil and low-dose aspirin are proving useful for cardiovascular health, they are also reasonable – and even if soy, vitamin E, and selenium have less benefit for general health, they may still have a rational appeal for men with prostate cancer.

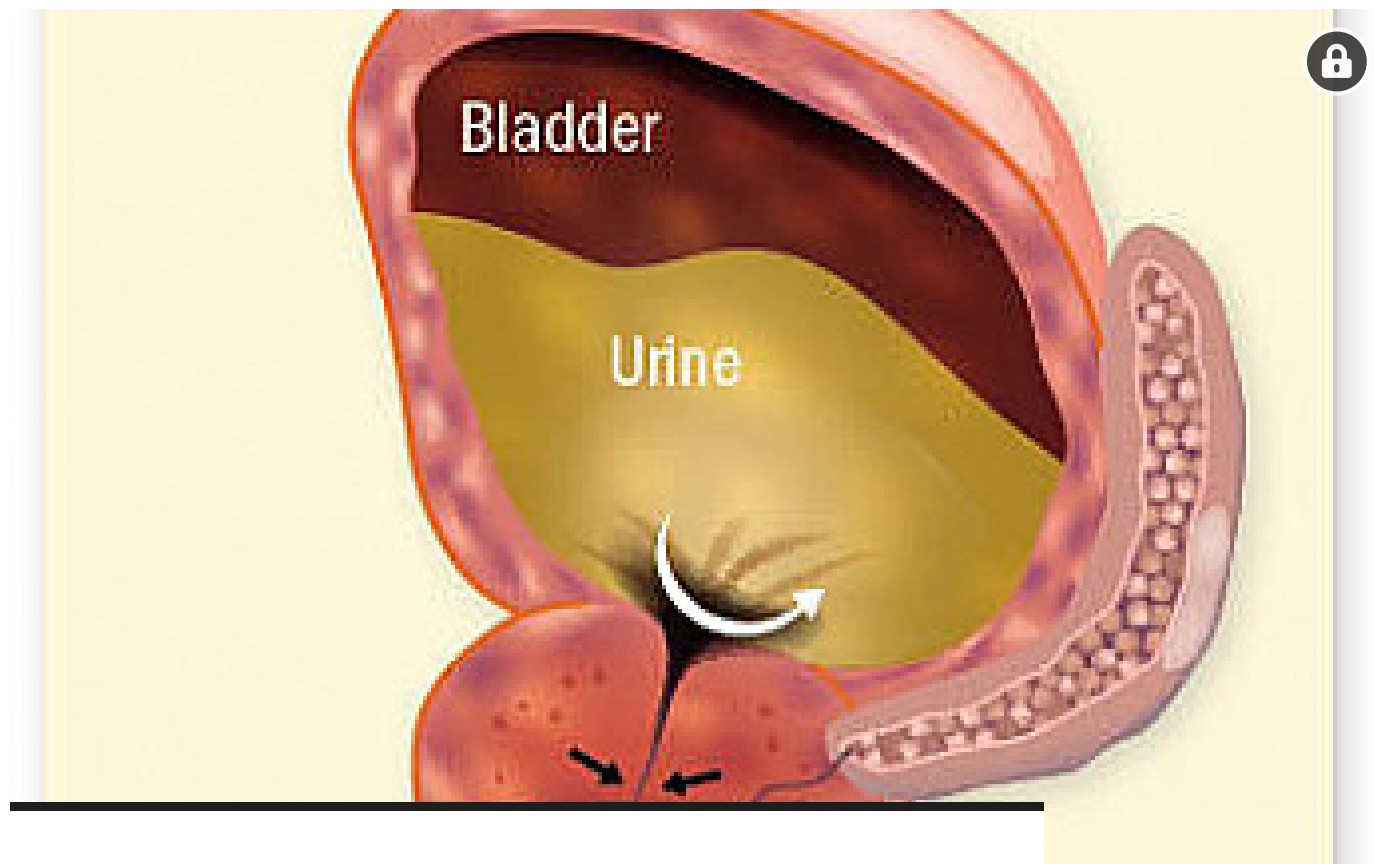
Lifestyle therapy or conventional treatment? For prostate cancer, as for so many areas of health, it's not a question of "either/or" but an answer of "both."

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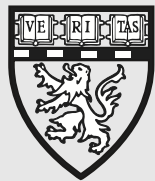
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