Bladder Cancer

Dr. John Bergman

What is Bladder Cancer?

"Bladder cancer begins when cells in the urinary bladder start to grow uncontrollably. As more cancer cells develop, they can form a tumor and spread to other areas of the body."

"Most bladder cancers start in the innermost lining of the bladder, which is called the urothelium or transitional epithelium. As the cancer grows into or through the other layers in the bladder wall, it becomes more advanced and can be harder to treat."

American Cancer Society [1]

Bladder Cancer Statistics

- About **76,960** new cases of bladder cancer
- About **16,390** deaths from bladder cancer
- Bladder cancer accounts for about 5% of all new cancers
- It is the **Fourth most common cancer in men**

American Cancer Society [2]

Who Gets Bladder Cancer?

- **Bladder cancer occurs mainly in older people**
- About 9 out of 10 people with this cancer are over the age of 55
- The average age at the time of diagnosis is 73
- Men are about 3 to 4 times more likely to get bladder cancer during their lifetime than women
- Overall, the chance men will develop this cancer during their life is about **1 in 26**

American Cancer Society [2]

Bladder Cancer Symptoms

- Blood in urine (hematuria)
- Frequent urination
- Painful urination
- Back pain
- Pelvic pain

Mayo Clinic [4]

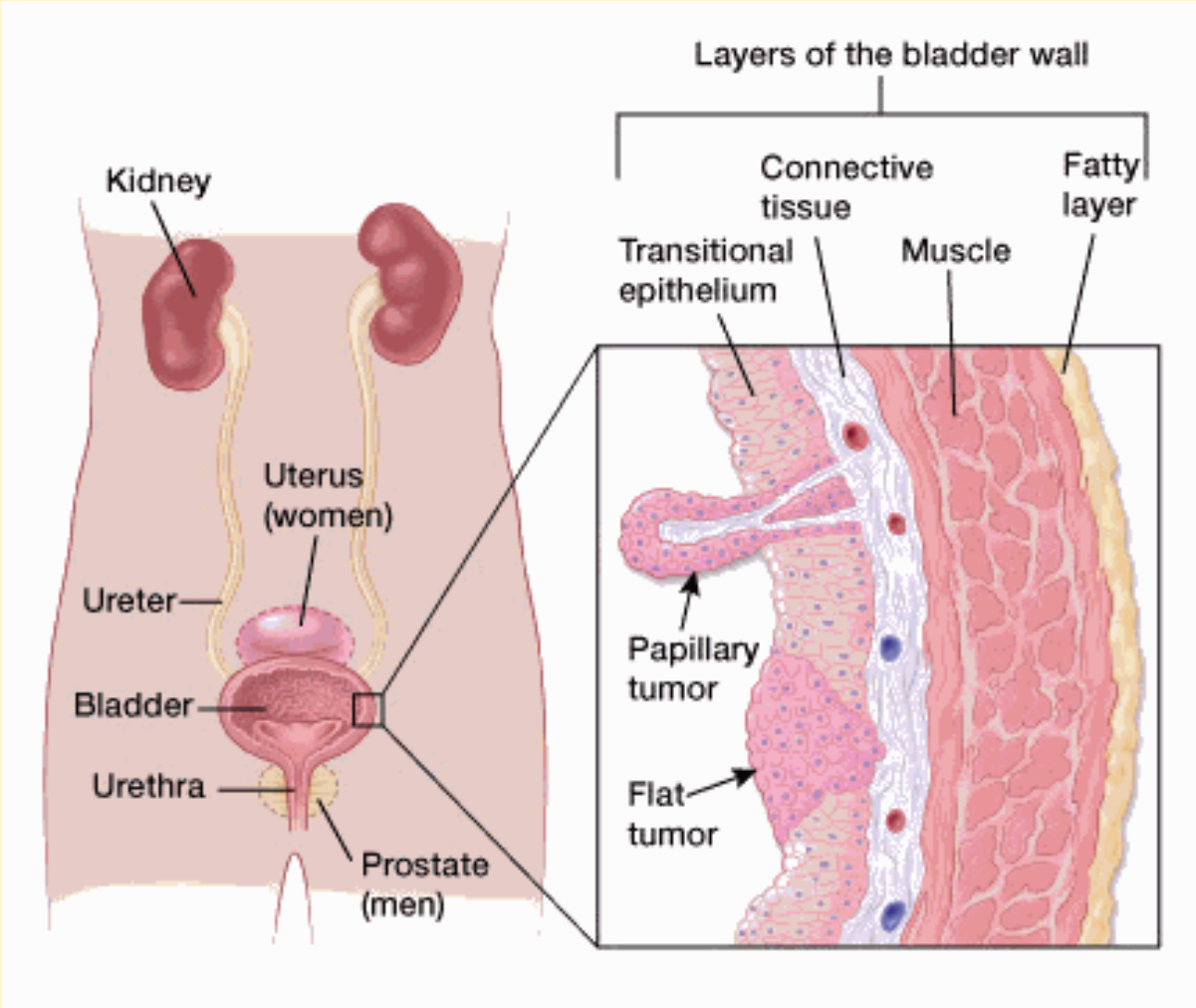
Types of Bladder Cancer

Papillary carcinomas

- Grow in slender, finger-like projections from the inner surface of the bladder toward the hollow center

Flat carcinomas

- Do not grow toward the hollow part of the bladder at all



Is Cancer a Malfunction of the Body?

What Causes Bladder Cancer?

“Researchers do not know exactly what causes most bladder cancers.”

“But they have found some **risk factors** and are starting to understand how they cause cells in the bladder to become cancer.”

American Cancer Society [2]

Genetics and Bladder Cancer

"Cancers can be caused by DNA changes (gene mutations) that turn on oncogenes or turn off tumor suppressor genes. Several different gene changes are usually needed for a cell to become cancer."

"Certain changes in the DNA inside normal bladder cells can make them grow abnormally and form cancers."

American Cancer Society [2]

You Have Control of Your Genes!

The Risk Factors for Bladder Cancer

Smoking

- Smokers are at least **3 times as likely to get bladder cancer** as nonsmokers

Chemicals

- Chemicals called aromatic amines, such as benzidine and beta-naphthylamine, which are sometimes used in the dye industry.
- Also chemical used to make rubber, leather, textiles, paint products and printing companies
- Painters, machinists, printers, hairdressers (probably because of heavy exposure to hair dyes), and truck drivers (likely because of exposure to diesel fumes) have a higher risk of bladder cancer

The Risk Factors for Bladder Cancer

Medications

- According to the US Food and Drug Administration (FDA), use of the diabetes medicine pioglitazone (Actos) for more than one year may be linked with an increased risk of bladder cancer.

Statins

- "Prolonged (more than 4 years) use of statins was associated with a significantly increased risk of colorectal cancer, **bladder cancer** and lung cancer."

BMC Cancer [15]

American Cancer Society [3]

The Risk Factors for Bladder Cancer

Chronic Bladder Irritation, Inflammation and Infections

- Urinary infections, kidney and bladder stones, bladder catheters left in place a long time, and other causes of chronic bladder irritation have been linked with bladder cancer

Chemotherapy or Radiation Therapy

- Taking the chemotherapy drug cyclophosphamide (Cytoxan) for a long time can irritate the bladder and increase the risk of bladder cancer.
- People who are treated with radiation to the pelvis are more likely to develop bladder cancer.

The Risk Factors for Bladder Cancer

Not Drinking enough fluids

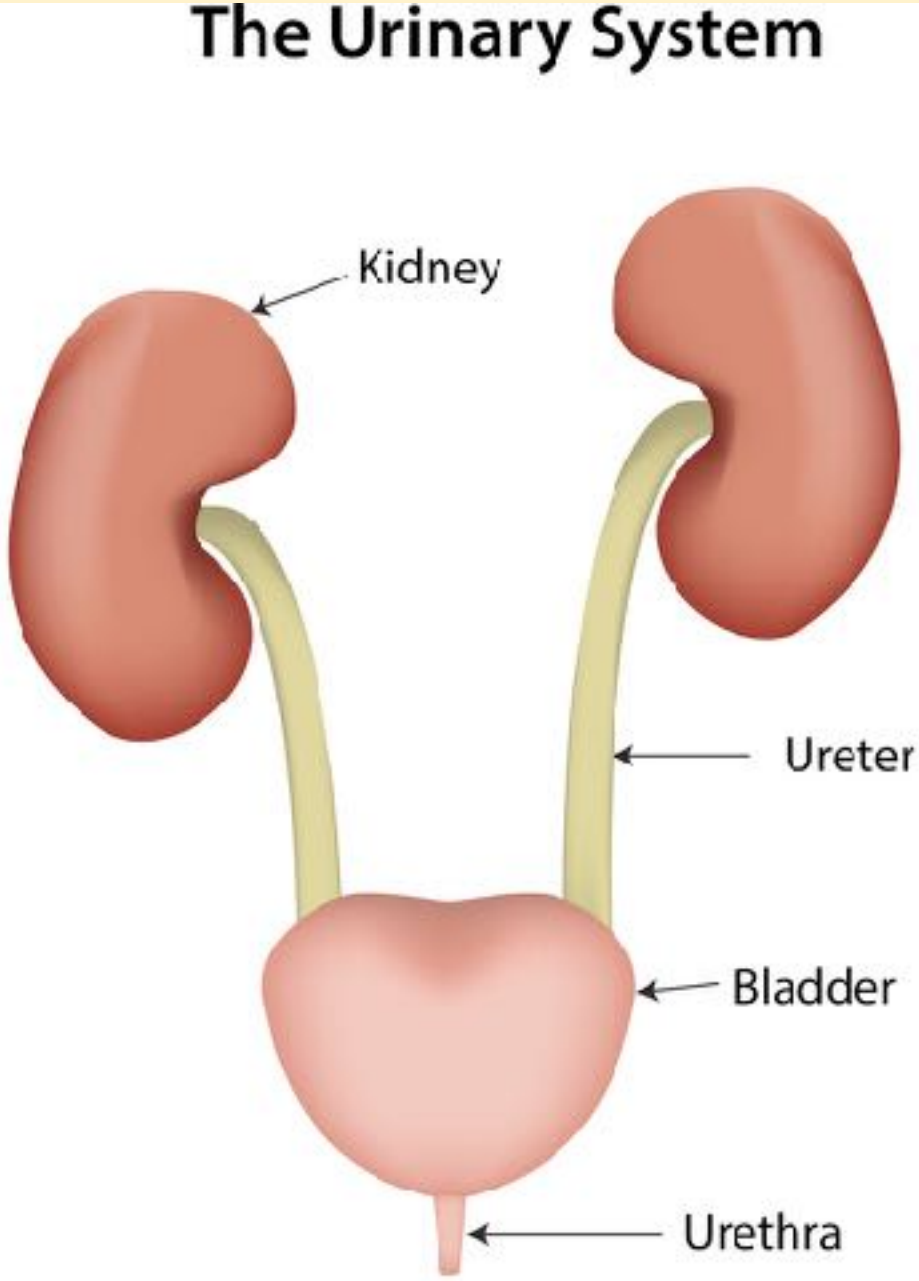
- People who drink a lot of fluids, especially water, each day tend to have lower rates of bladder cancer. This might be because they empty their bladders more often, which could **keep chemicals from lingering in their bladder**.

American Cancer Society [3]

Is Cancer a Malfunction of the Body?

Anatomy and Physiology of the Bladder

- The bladder is a hollow organ in the pelvis with flexible, muscular walls
- Its main function is to store urine before it leaves the body
- Urine is made by the kidneys and is then carried to the bladder through tubes called ureters
- When you urinate, the muscles in the bladder contract, and urine is forced out of the bladder through a tube called the urethra

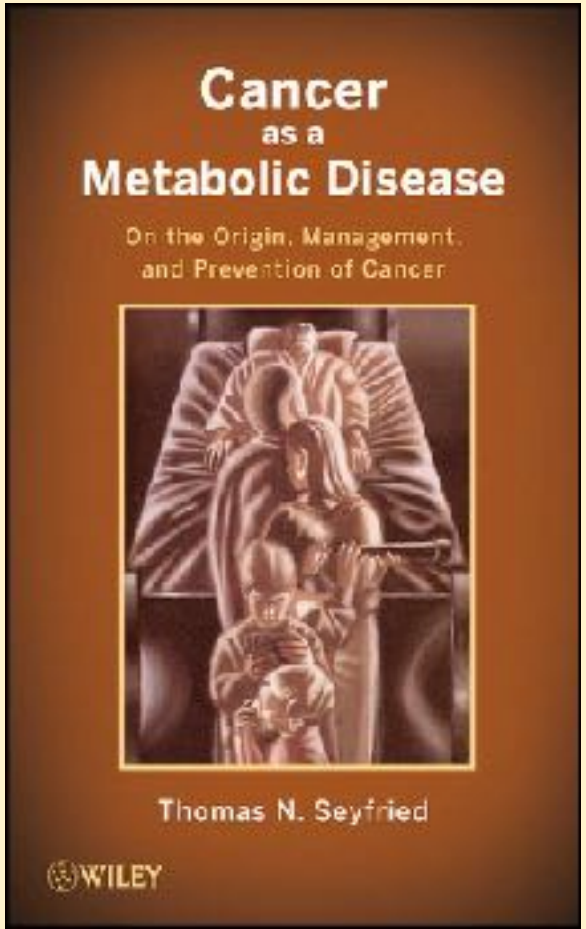


Cancer is a Metabolic Disease, NOT a Genetic Disease

- Dr. Thomas N. Seyfried: world renowned researcher
- Spent the majority of career researching cancer and genetics

"**No real progress** has been made in the management of advanced or metastatic cancer for more than **40 years.**
The number of people dying each year and each day has changed little in more than 10 years."

Source [5,6]



Cancer is a Metabolic Disease

- The view that most cancer is a genetic disease is no longer credible.
- Most cancer, regardless of cell or tissue origin, is a singular disease of respiratory insufficiency coupled with compensatory fermentation.

- There are not really hundreds of cancer types that need to be studied separately.

  There is a common mechanism for treating all cancers.

Cancer is a Metabolic Disease

- Cancer cells depend largely on glucose and glutamine metabolism for survival, growth, and proliferation.
- Restricted access to glucose and glutamine will compromise cancer cell growth and survival. **When cancer cells do not have glucose to nourish them, they die.**

- Protection of mitochondria from oxidative damage will prevent or reduce risk of cancer. **Antioxidants prevent cancer.**

Source [5,6]

Cancer is a Metabolic Disease

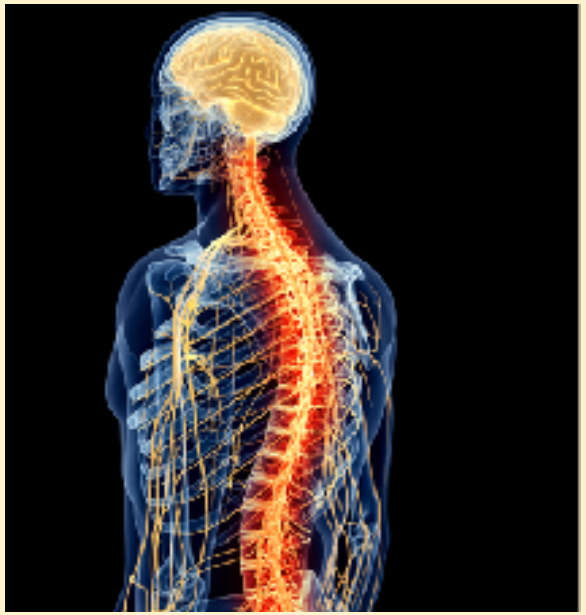
"Lifestyle changes will be needed to manage and prevent cancer. This means that **there is no magic pill** that we can take to prevent or cure cancer.

We must change our relationship with food and lifestyle to prevent and cure cancer."

"A new era will emerge for cancer management and prevention, once cancer becomes recognized as a metabolic disease."

Source [5,6]

The 5 Keys to Health and Healing



Proper nerve supply

Regular Exercise

Proper Nutrition

Sufficient Rest

Prayer and Meditation

Proper Nerve Supply

BLADDER INNERVATION

- Micturition is fundamentally a **spinal reflex** facilitated and inhibited by higher brain centers and, like defecation, subject to **voluntary facilitation and inhibition**

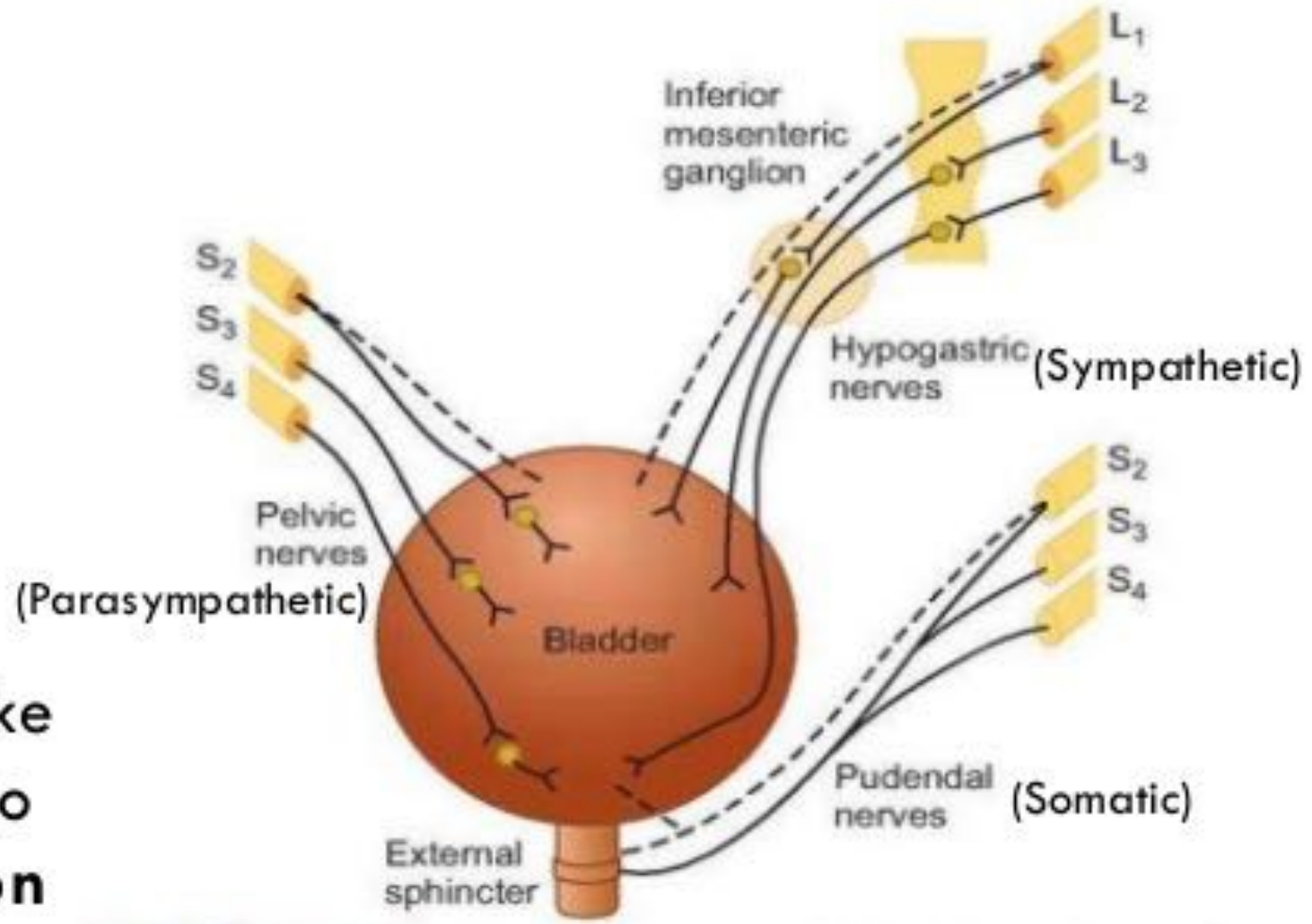
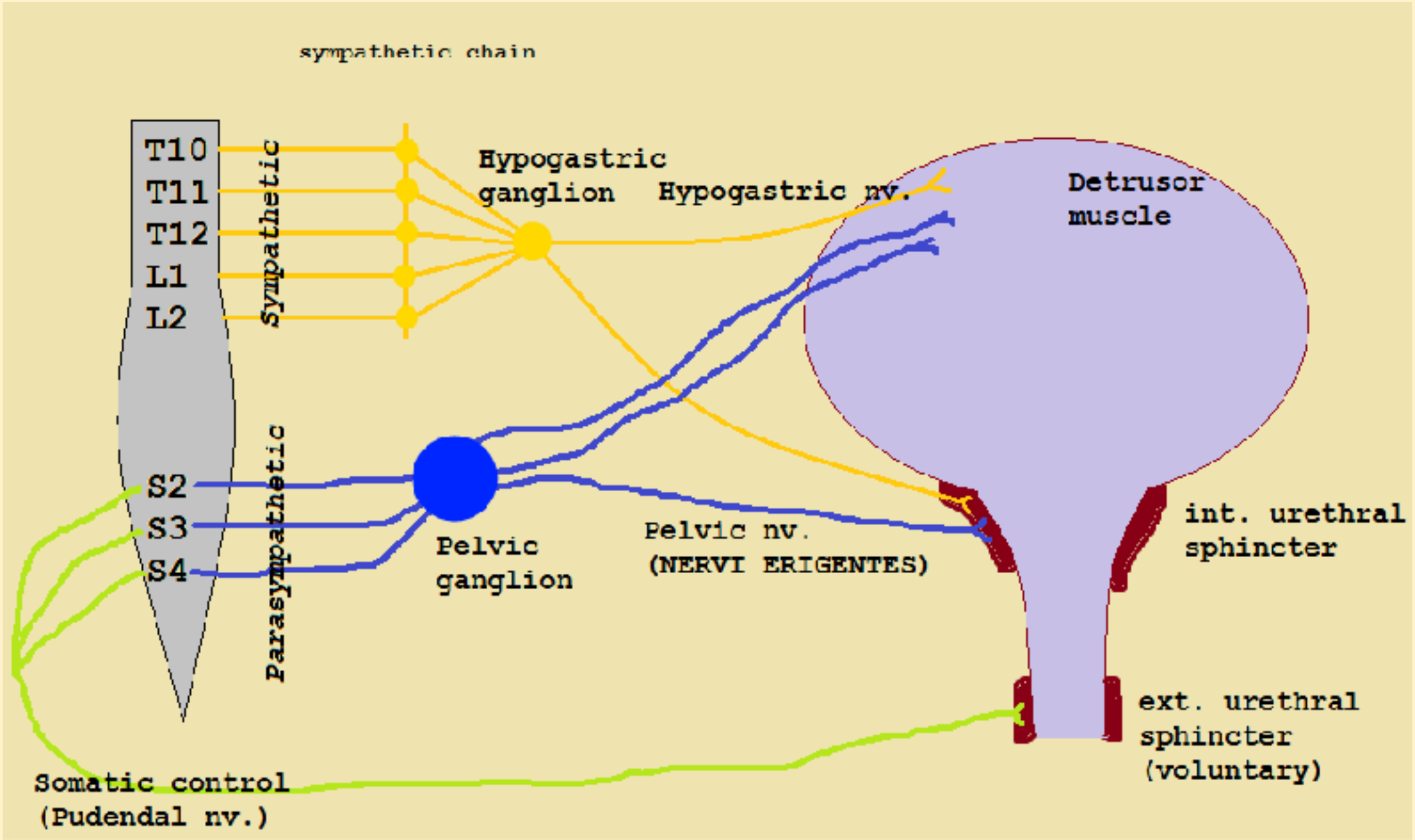


FIGURE 38–20 **Innervation of the bladder.** Dashed lines indicate sensory nerves. Parasympathetic innervation is shown at the left, sympathetic at the upper right, and somatic at the lower right.

Proper Nerve Supply



Proper Water Intake

- **Drink 50% of your body weight in Ounces**
- A 200lb person needs at least 100 ounces of water daily
- In
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it's

Filter your Water

- Harmful chemicals like **Fluoride and Chlorine** are added to most water supplies
- **These chemicals disrupt thyroid function**
- Avoid plastic bottled water because these could contain endocrine disrupting chemicals like **Bisphenol (BPA)**
- My favorite water filter: **Doulton USA**

Proper Nutrition

"It is biologically plausible for dietary factors to influence bladder cancer risk considering that beneficial as well as harmful components of a diet are excreted through the urinary tract and in direct contact with the epithelium of the bladder."

"A diet rich in fruits and vegetables and low in processed meat along with especially smoking cessation may convey some protective effects against bladder cancer risk."

Investigative and Clinical Urology [11]

Deficiencies caused by smoking: Vitamin C, Vitamin A, Glutathione

Vegetables and Bladder Cancer

"Our data strongly support that high vegetable consumption, especially cruciferous vegetable intake, may protect against bladder cancer"

Cancer Epidemiology, Biomarkers and Prevention [14]

"Epidemiologic evidence suggests diets rich in cruciferous vegetables, particularly broccoli, are associated with lower bladder cancer risk."

Molecular Nutrition and Food Research [18]

Why are Cruciferous Vegetables so Beneficial?

"Isothiocyanates are a well-known class of cancer chemopreventive agents, and broccoli sprouts are a rich source of several isothiocyanates."

"The incidence, multiplicity, size, and progression of bladder cancer were all inhibited by the extract, while the extract itself caused no histologic changes in the bladder. Moreover, inhibition of bladder carcinogenesis by the extract was associated with significant induction of glutathione S-transferase in the bladder, enzymes that are important protectants against oxidants and carcinogens."

"In conclusion, broccoli sprout extract is a highly promising substance for bladder cancer prevention and the isothiocyanates in the extract are selectively delivered to the bladder epithelium through urinary excretion."

Cancer Research [28]

Sources of Isothiocyanate:

- Broccoli and broccoli sprouts
- Brussel sprouts
- Cauliflower
- Cabbage
- Arugula
- Watercress
- Horseradish

"**Broccoli and broccoli sprouts** have the highest amount of the isothiocyanates"

Journal of Carcinogenesis

Vitamin B9- Folate and Bladder Cancer

"Dietary folate, a water-soluble B vitamin found in a variety of fruits and vegetables, is of particular interest as a chemopreventive agent **due to its role in DNA methylation and DNA synthesis and repair.**"

"In summary, high intake of dietary folate was associated with an overall decrease in bladder cancer risk."

Nutrition and Cancer Journal [13]

Sources of Vitamin B9 (Folate)

- Beans (Black Eyed Peas)
- Lentils
- Spinach
- Asparagus
- Lettuce (Cos or Romaine)
- Avocado
- Broccoli
- Tropical Fruits (Mango)
- Oranges

Vitamin D and Bladder Cancer

"This review consistently found strong inverse correlations with solar UVB for 15 types of cancer: **bladder, breast, cervical, colon, endometrial, esophageal, gastric, lung, ovarian, pancreatic, rectal, renal, and vulvar cancer; and Hodgkin's and non-Hodgkin's lymphoma.**"

Anticancer Research [9]

"**Vitamin D deficiency is associated with increased risk of bladder carcinoma** in present study."

Cellular Physiology and Biochemistry [10]

"**Lower serum Vitamin D was associated with an increased risk of bladder cancer.**"

Biological Trace Element Research [17]

Optimize Your Vitamin D levels

- **UVB exposure** from the Sun is the best way to optimize your vitamin D levels
  - At least 20 minutes of **sun exposure daily** during mid day
  - Your shadow shouldn't be longer than your height

- Most regions of the planet don't get proper sunlight for **6 months** out of the year
- Vitamin D3 supplementation during the winte
- Adults required about **8,000 IUs per day**

Vitamin D and Vitamin K2

- Vitamin K2 is essential for proper utilization of vitamin D

Sources of Vitamin K2

- Grass-fed organic animal products (eggs, butter, dairy)
- Fermented foods
- Certain cheeses (Brie, Gouda)

Capsaicin and Bladder Cancer

"Capsaicin, the major pungent ingredient in genus Capsicum, has recently been tried as an intravesical drug for overactive bladder and **it has also been shown to induce apoptotic cell death in many cancer cells**."

Archives of Pharmacal Research [29]

"Capsaicin induces cell death through increased reactive oxygen species and decreased mitochondrial membrane potential. Furthermore, **capsaicin inhibits the proliferation of bladder carcinoma**."

International Journal of Urology [26]

Sources of Capsaicin

Capsaicin is present in peppers produced by certain pepper plants (Capsicum frutescens)

- **Cayenne, Green or Red chili, Spur or Tabasco peppers**

-These varieties of peppers contain about **198,000 parts per million of capsaicin**

Sweet Peppers contain Capsaicin in Lower Amounts

- **Bell, Cherry, Cone, Green, Paprika**

-These peppers contains **4,000 parts per million of capsaicin**

Conjugated Linoleic Acid (CLA) and Bladder Cancer

"CLA has been demonstrated to exert strong anticarcinogenic effects in a variety of experimental cancer models."

"CLA inhibits cell proliferation and increases programmed cell death in human bladder cancer cells"

Journal of Medicinal Food [30]

Sources of CLA

- Grass-fed Beef
- Raw Milk
- Eggs
- Grass-fed Butter

Turmeric (Curcumin) and Bladder Cancer

“Curcumin promotes apoptosis of bladder tumor cells.”

International Brazilian Journal of Urology [21]

“Curcumin is a potent cytotoxic agent against the MBT and UMUC bladder tumor cell lines. In addition, **curcumin effectively inhibits tumor implantation and growth.**”

Journal of Urology [22]

“Our results suggest that **curcumin potentiates the antitumor effect** of BCG through the inhibition of NF-kappaB and induction of TRAIL receptors in bladder cancer cells.”

Cancer Research [23]

Turmeric (Curcumin) and Bladder Cancer

"Curcumin induces programmed cell death in human bladder cancer cells"

Anticancer Drugs [32]

"Curcumin (diferuloylmethane) is a natural compound that has been known to possess anticancer properties in various cancers, including bladder cancer."

Cancer Prevention Research [34]

"Curcumin, a polyphenol compound derived from Curcuma longa Linn, has been recognized as a promising anti-cancer drug due to its multiple properties including anti-inflammatory, antioxidant and anti-carcinogenic activities."

"These observations suggest that curcumin may have therapeutic potential for bladder cancer patients."

Oncology Reports [33]

Curcumin

- A derivative of turmeric and the pigment that gives its yellow-orange color

Some Benefits of Curcumin

- Inhibit the proliferation of tumor cells
- Inhibit the transformation of cells from normal to tumor
- Help the body destroy mutated cancer cells so they cannot spread throughout the body
- Decrease inflammation
- Help prevent the development of additional blood supply necessary for cancer cell growth (angiogenesis)

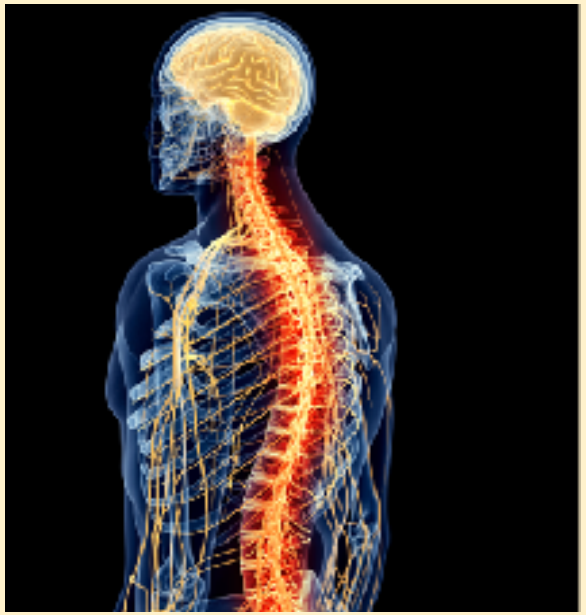
Turmeric

"Turmeric (Curcuma longa), a commonly used spice throughout the world, has been shown to exhibit **anti-inflammatory, antimicrobial, antioxidant, and anti-neoplastic properties.**

Phytotherapy Research

The Perfect Meal for Preventing Bladder Cancer

The 5 Keys to Health and Healing



Proper nerve supply

Regular Exercise

Proper Nutrition

Sufficient Rest

Prayer and Meditation

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Free access if You Are a
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