

# Erectile Dysfunction in Scleroderma

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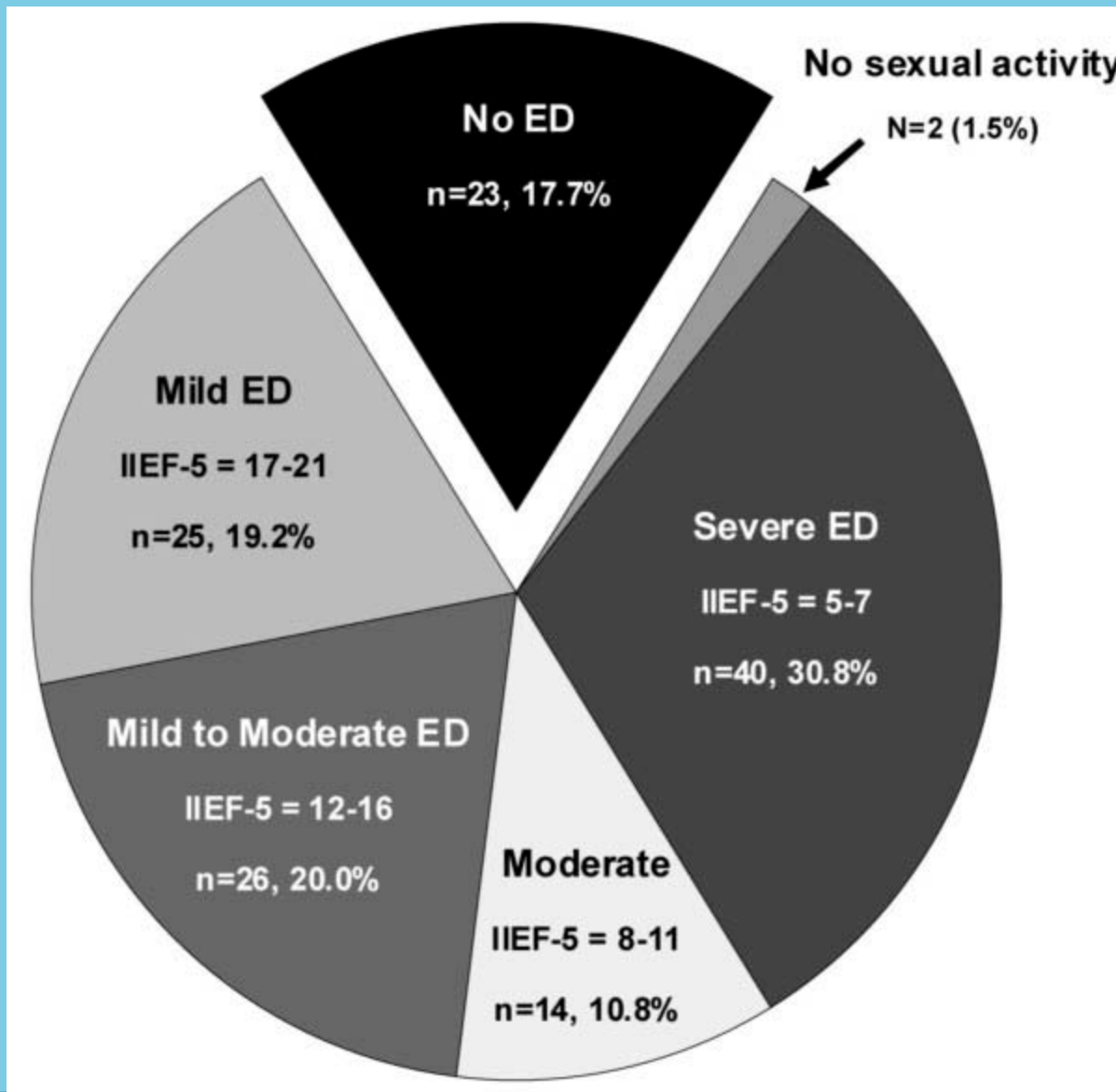
**Erectile dysfunction is frequent in systemic sclerosis and associated with severe disease: a study of the EULAR Scleroderma Trial and Research group**

- The study was performed using the multinational database of the EULAR Scleroderma Trial and Research (EUSTAR) group, which was inaugurated in 2004.
- provide all men consecutively with the International Index of Erectile Function-5 (IIEF-5), a self-administered questionnaire

- The IIEF-5 provides a numerical score that is classified into five categories: severe ED (scores 5 to 7), moderate ED (scores 8 to 11), mild to moderate ED (scores 12 to 16), mild ED (scores 17 to 21), and no ED (scores 22 to 25).

# Prevalence of erectile dysfunction in systemic sclerosis

- Of the 130 participants, only 23 men (17.7%) had a normal IIEF-5 score ( $\geq 22$ ).
- (38%) had severe ED



- A number of conditions are associated with ED in the general population.
- These conditions include
  - ❖ cardiovascular risk factors,
  - ❖ medications (antidepressants, sedatives, neuroleptics, antiepileptics, diuretics),
  - ❖ alcoholism,
  - ❖ neurological
  - ❖ endocrine disorders
  - ❖ prostatic disease.
- The majority of the participating men had at least one such comorbidity

- Men with ED more frequently had more than one simultaneous comorbidity than men with normal erections.
- Significantly more men with ED (13.8%) than those without ED (0%) consumed alcohol in excess of 2 units per day and twice as many had depression

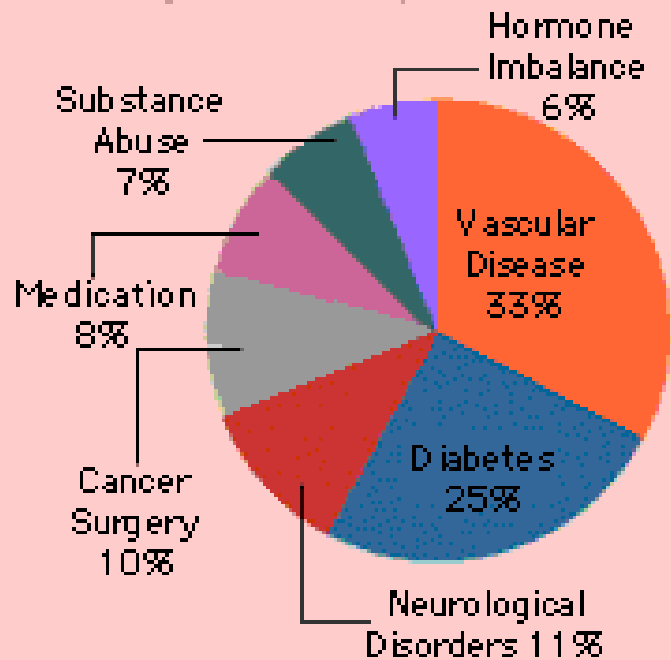


- Men with severe ED (IIEF-5 scores 5 to 7) had the highest prevalence of depression as judged by the treating physician (10.8%).
- In the majority of patients, the erectile problem started after the onset of SSc (in 90.1% of SSc patients after the onset of Raynaud's phenomenon, and in 82.1% of men after the manifestation of the first non-Raynaud's symptom of SSc).

- The presence of ED was also associated with more severe organ involvement in SSc.

# Scleroderma not the only disease associated with ED

## The Causes of Physical Impotence



Source: New England Research Institute, 1993

## Prevalence of ED with specific medical conditions

Condition	Prevalence (%)
Overall (age 40–70 years)	10
Diabetes	35
Hypertension	25
Post MI	40
Severe depression	90
Cigarette smokers	20

# What exactly is ED ?

- Erectile dysfunction (ED) is the inability to get a good enough erection to have sexual intercourse. ED may involve:
- Inability to get an erection.
- Lack of enough hardness to allow penetration.
- Loss of the erection before sex is finished.
- Premature ejaculation.
- Any combination of these problems if they occur more than 25% of the time.

## ➤ CAUSES

### ➤ Certain drugs, such as:

- ❖ Pain relievers.
- ❖ Antihistamines.
- ❖ Antidepressants.
- ❖ Blood pressure medicines.
- ❖ Water pills.
- ❖ Ulcer medicines.
- ❖ Muscle relaxants.
- ❖ Illegal drugs

- Excessive drinking.
- Psychological causes, such as:
  - Anxiety.
  - Depression.
  - Sadness.
  - Exhaustion.

- Performance fear.
- Stress.
- Physical causes, such as:
  - **Artery problems. This may include diabetes, smoking, liver disease, or atherosclerosis.**
  - High blood pressure.
  - Hormonal problems, such as low testosterone.

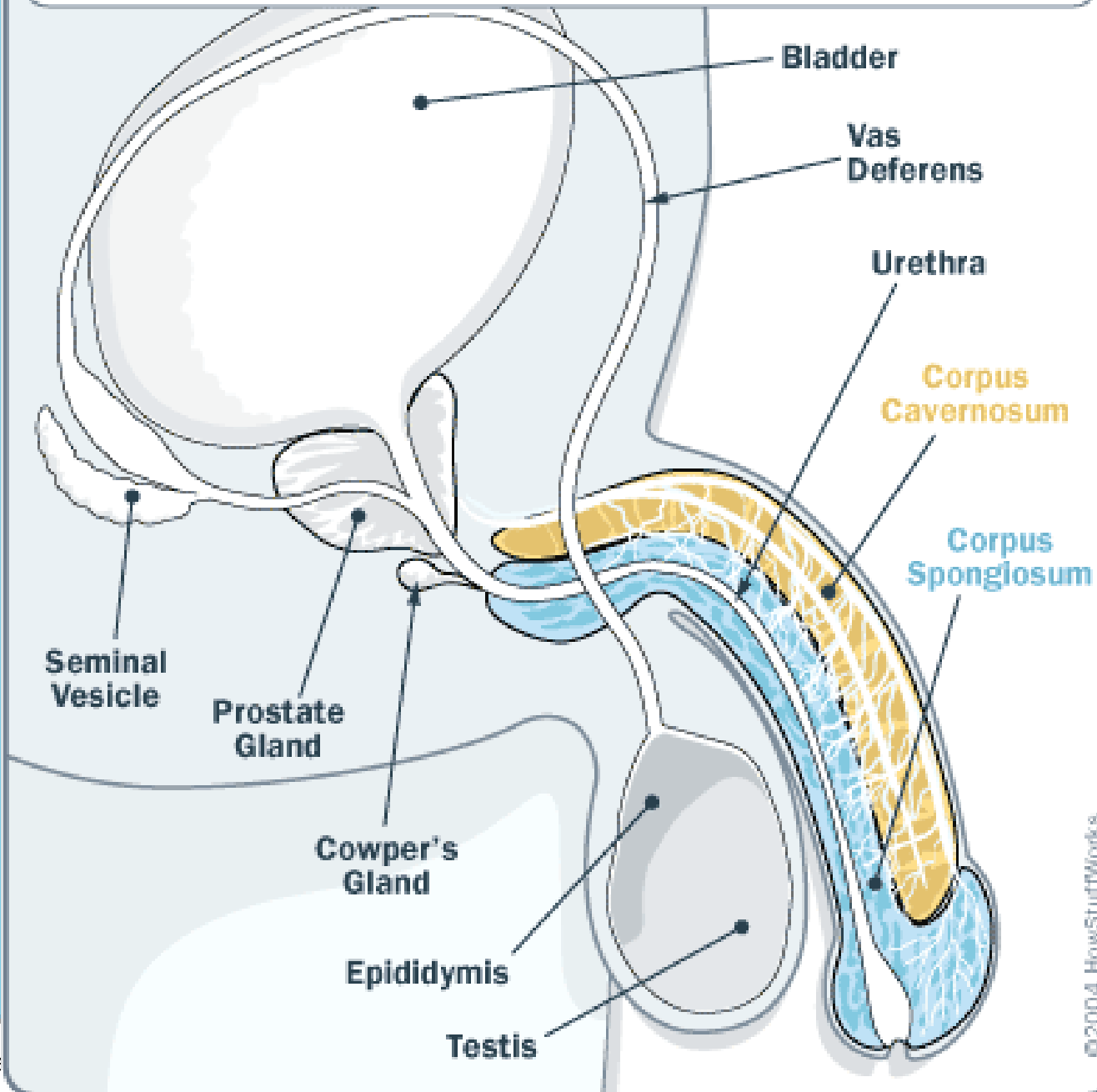
- ❖ Obesity.
- ❖ Nerve problems. This may include back or pelvic injuries, diabetes, multiple sclerosis, Parkinson's disease, or some surgeries.

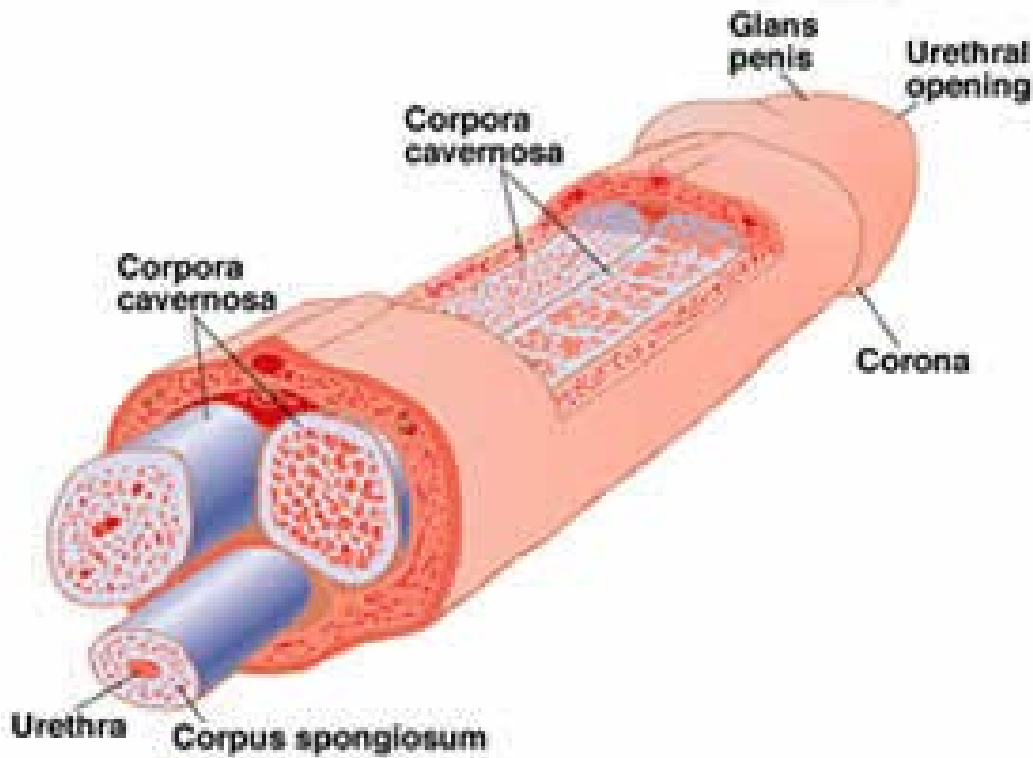


# How does an erection happen?

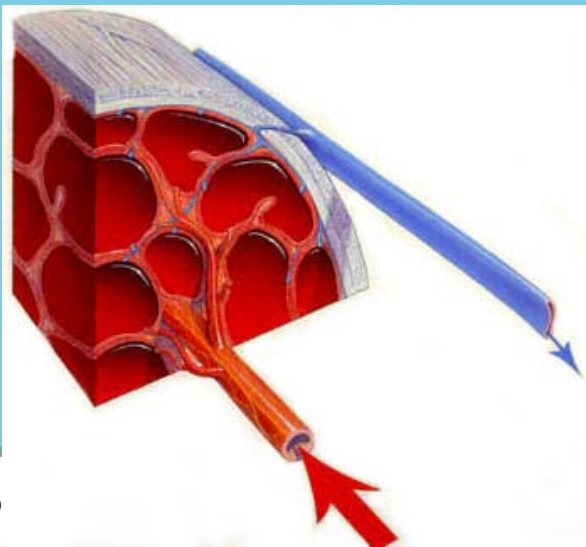
- A penile erection is the hydraulic effect of blood entering and being retained in sponge-like bodies within the penis

# Penis Anatomy



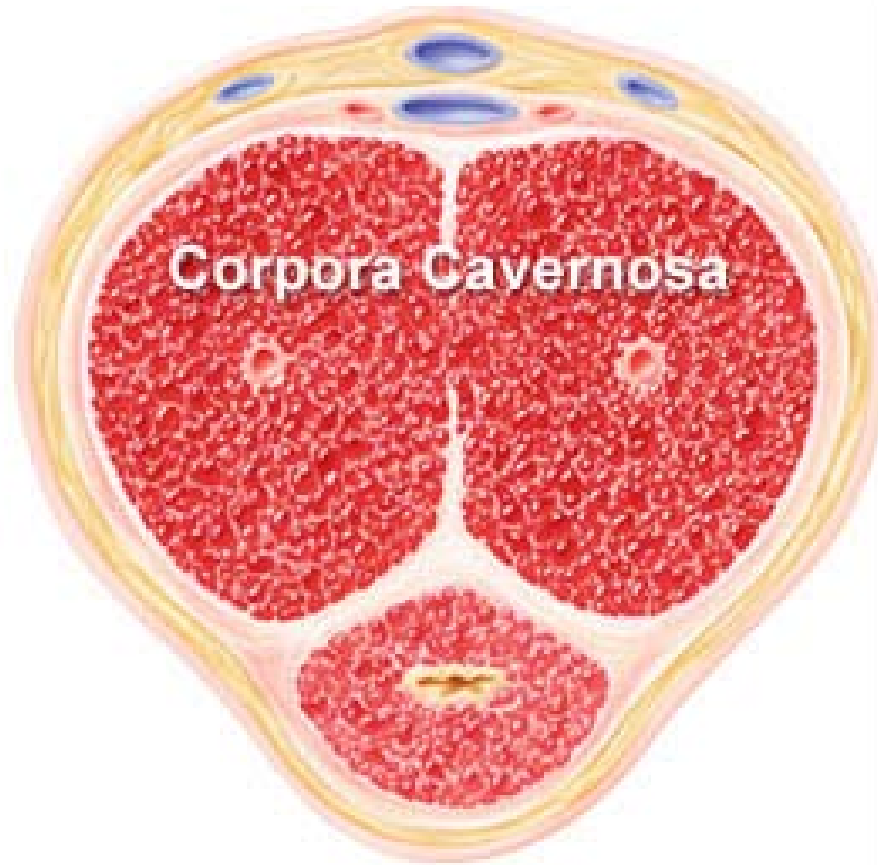


The two corpora cavernosa and corpus spongiosum are three expandable erectile tissues along the length of the penis which fill with blood during penile erection



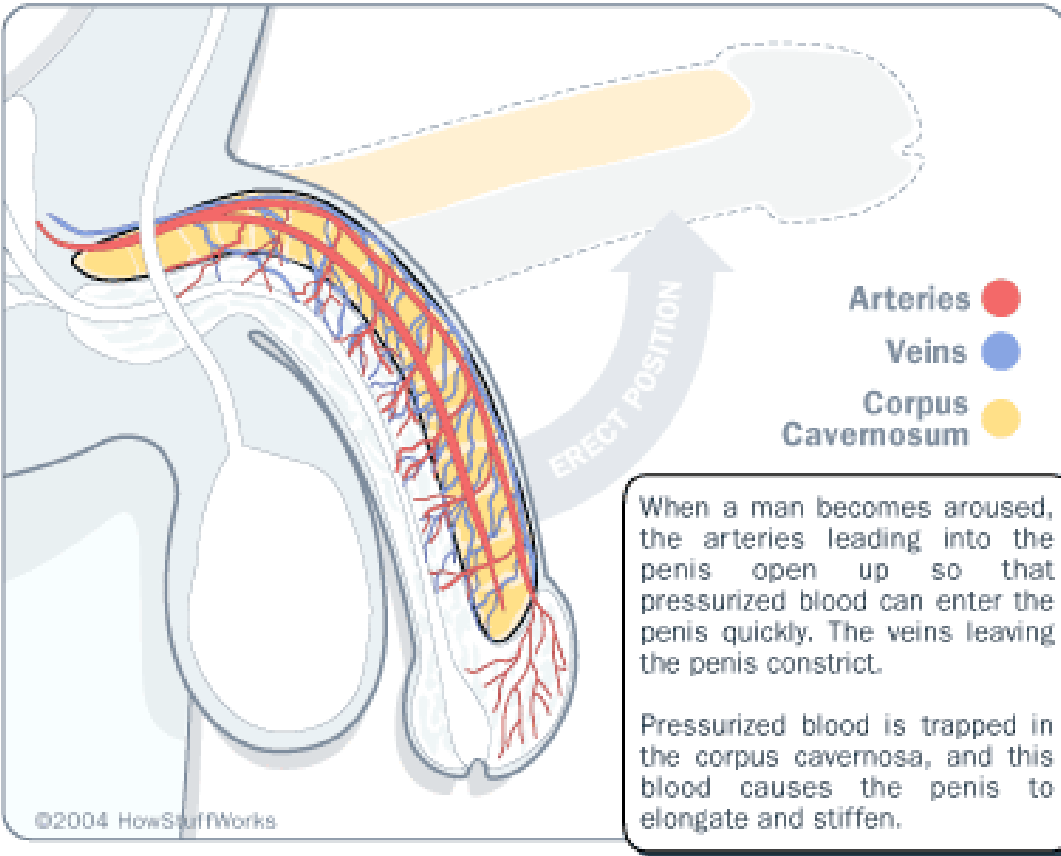


**Flaccid**

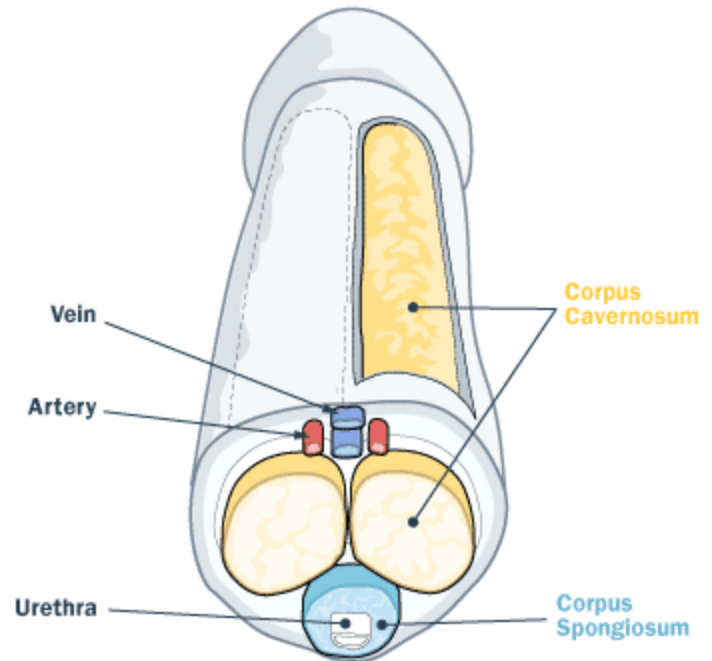


**Erect**

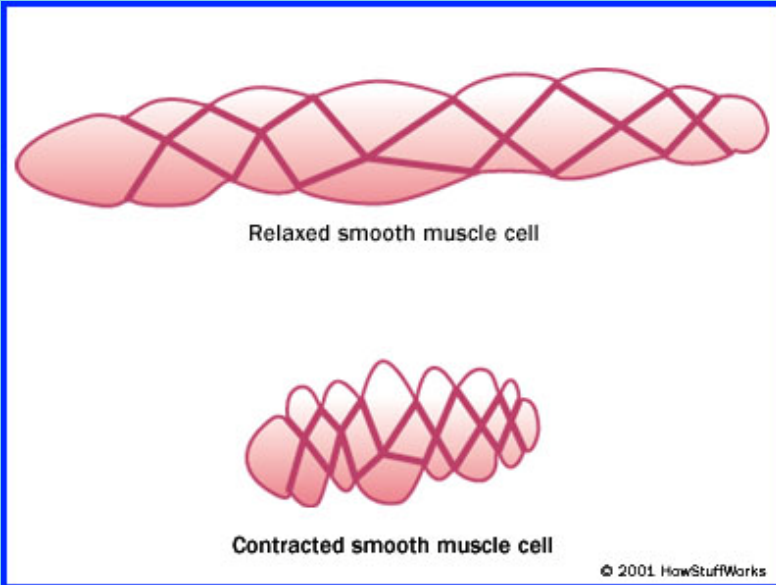
# Erection Physiology



# Penis Anatomy



- Inside the body there are several kinds of muscle:
- Skeletal muscle is what we see at the Olympics -- bulging biceps, and so on.
- Cardiac muscle powers the heart.
- **Smooth muscle can be found in things like blood vessels, the intestines and the stomach, and it usually acts involuntarily.**
- **Smooth muscle plays a key role in every erection,**



- The arteries of a limp penis are constricted, and they keep blood from entering the corpora cavernosa
- Smooth muscle in the wall of the artery must be able to relax to allow the artery to open and let blood into the penis

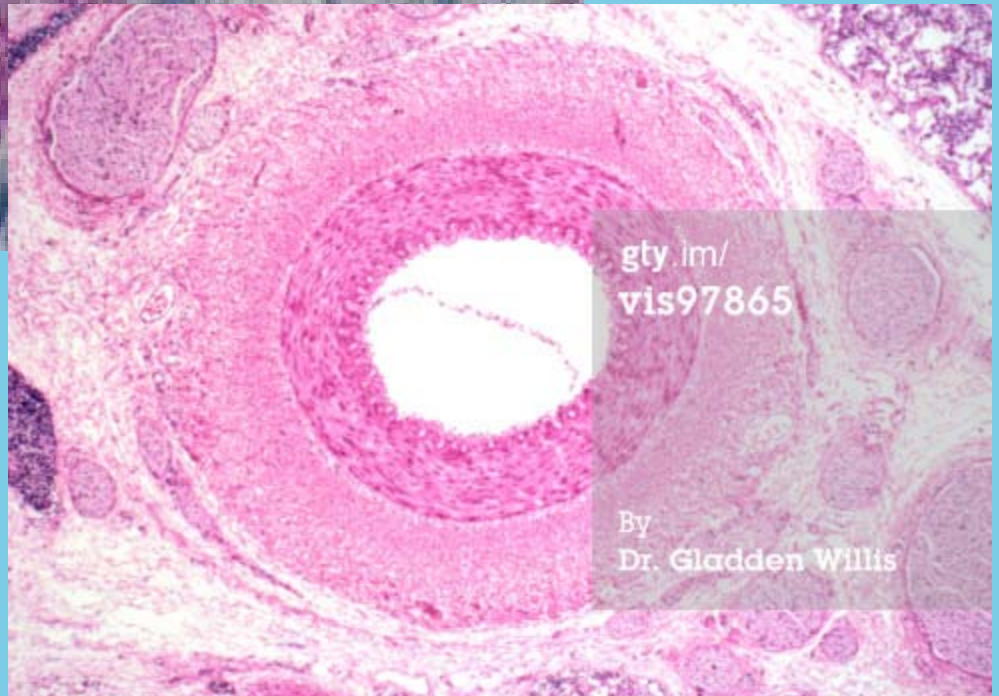
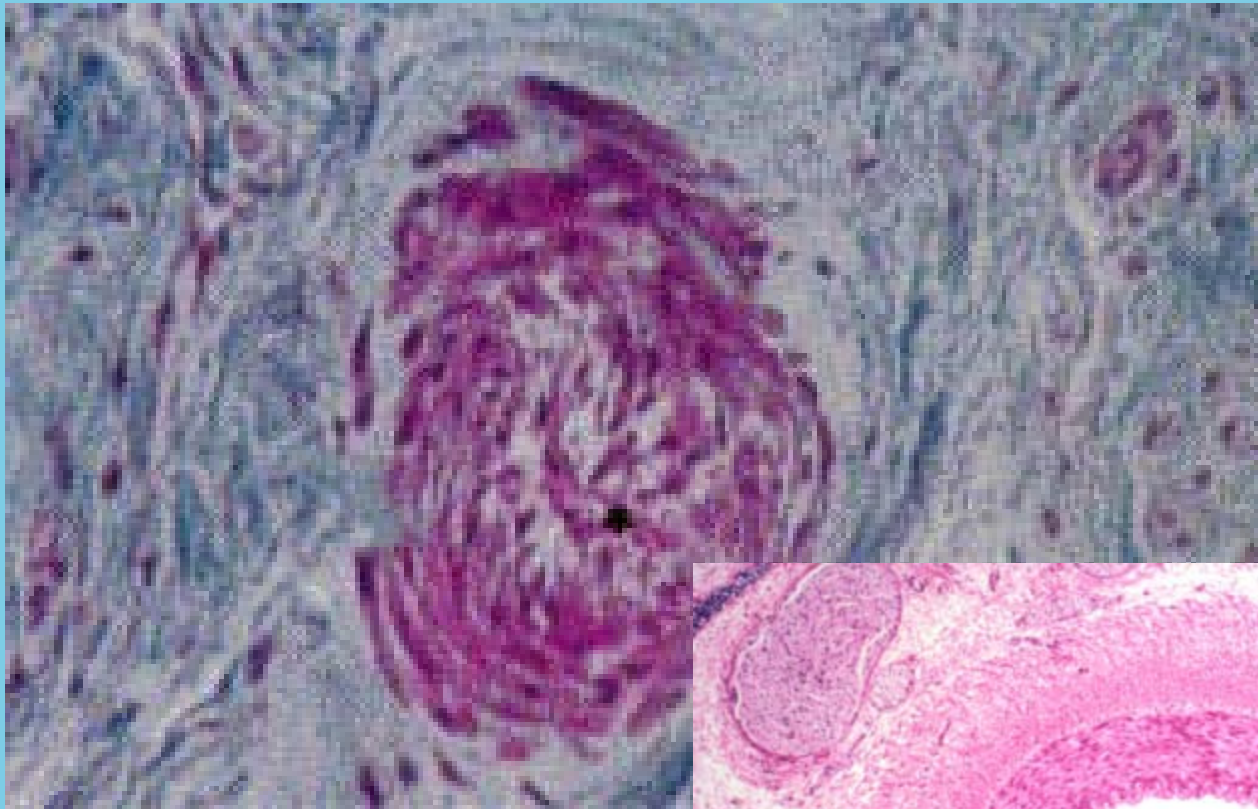
# So what does this have to do with scleroderma?

- There are 3 major characteristics of scleroderma:
  - 1. autoimmunity eg antibodies in blood
  - 2. fibrosis or scarring eg thick skin, scarring in lungs
  - 3. vascular disease eg high blood pressure in lungs (pulmonary hypertension), kidney crisis



# Vascular disease

- Blood vessels in many areas of the body in scleroderma are very abnormal
- The wall of the vessel is thickened and the vessel permits less blood to get through and the vessel cannot relax properly.
- Those smooth muscle cells in the vessel wall cannot relax properly



The Journal of Urology Volume 153, Issue 4 1995 1140 - 1146

High power histological examination of medium sized artery 170 micrometer in diameter reveals cavernous artery vasculopathy (asterisk), including adventitial fibrosis, myo-intimal proliferative lesions and luminal stenosis. Masson trichrome stain...

- So you can see why ED might occur in scleroderma
- If the blood vessels leading to the penis are abnormal, when the brain send the message down there to the blood vessel wall smooth muscle to relax, open up the vessel and allow extra blood to flow into the penis, it just cannot do that

# Treatment of ED

# Psychological effects of ED

- In virtually every case of impotence, there are emotional issues that can seriously affect the man's self-esteem and relationships, and may even cause or perpetuate erectile dysfunction.
- Many men tend to fault themselves for their impotence even if it is clearly caused by physical problems over which they have little control.

## ➤ **TREATMENT**

- You may be prescribed medicines by mouth.
- You may be given medicine injections into the penis.
- You may be prescribed a vacuum pump with a ring.
- Penile implant surgery may be performed. You may receive:
  - ❖ An inflatable implant.
  - ❖ A semi-rigid implant.
- Blood vessel surgery may be performed.

# HOME CARE INSTRUCTIONS

- Take all medicine as directed by your caregiver.
- **Do not** take any other medicines without talking to your caregiver first.
- Follow your caregiver's directions for specific treatments as prescribed.
- Follow up with your caregiver as directed.

# Viagra

- prescribed in over 90% of erectile dysfunction cases.
- Studies indicate that it helps 70% of patients achieve sexual function.
- In one 1999 study, overall male satisfaction was 65%.
- the best results occurred in men who had the fewest sexual problems before treatment, but even men with severe erectile dysfunction had a 41% satisfaction rate.
- A 2000 study of men who had responded well initially to sildenafil found that 96% of them were satisfied with the treatment after two to three years.



# *Administration and Effect*

- Sildenafil is effective within 20 to 40 minutes.
- The drug works only when the man experiences some sexual arousal.

# *Mechanism of Actions*

- Sildenafil was originally developed for heart disease, but was found to have a unique mechanism of action that targeted only factors in the penis.
- The drug blocks the enzyme phosphodiesterase.
- This action maintains persistent levels of *cyclic GMP*, a chemical that is produced in the penis during sexual arousal and which is the primary chemical that relaxes smooth muscles and increases blood flow.

- Viagra-like drugs work mostly on the smooth muscle in the penis and not the entire body, and only when the man is aroused.
- When a man has erectile dysfunction, there can be many reasons for the problem. But one of the most common reasons, especially in older men, is that the arteries in the penis aren't dilating enough when the brain sends the signal.

# *Common Side Effects*

- Common side effects include the following:
- Flushing.
- Muscle aches.
- Gastrointestinal distress.
- Headache.
- Nasal congestion.

# *Cialis :*

- is a potent and highly-selective PDE5 inhibitor and may not affect other parts of the body, including the brain, heart, kidney and eyes.
- Clinical trials are reporting significant success rates in up to 88% of patients.
- It appears to take effect in 15 minutes and the effects last up to 24 hours.
- Common side effects include headache, muscle pain, stomach upset following meals, and back pain.

# Treatment of erectile dysfunction

- Treatment information was obtained in 101 of the 105 men with ED
- A total 72.2% of men with abnormal erections did not receive any treatment for ED.
- In the remaining 27.8% of men, ED was treated with a phosphodiesterase-5 inhibitor as the recommended first-line modality in the non-SSc population.
- Sildenafil was the agent most commonly used; seven of the 15 men using sildenafil also had concomitant pulmonary arterial hypertension. Tadalafil was used in a total of 11 men.

- About one-third of men with SSc had severe ED in our investigation, whereas in the general population only 8.5% of the men with ED reported moderate or severe ED

- Although ED manifests after SSc onset in the vast majority of men , it appears as a relatively early symptom of SSc with a mean delay from SSc diagnosis of 2.7 years



- Among the modifiable risk factors of ED, the elevated alcohol consumption of men with ED deserves attention. The present data, however, do not permit one to differentiate whether alcohol consumption is a cause of ED, is a coping strategy for ED, or is unrelated to ED

# Treatment in scleroderma

- **Erectile dysfunction in systemic sclerosis: effects of longterm inhibition of phosphodiesterase type-5 on erectile function.**

- 14 nonconsecutive male patients with SSc with different degrees of ED were enrolled
- received once-daily tadalafil 10 mg for 12 weeks
- penile arterial inflow [peak systolic velocity (PSV), and the erectile function domain score were significantly improved