Vaccinations in lupus Juan Schmukler, MD Juan Schmukler@rush.edu

Talk outline

- How vaccines work and why they are important
- Types of vaccines
- Vaccines that people with lupus can (and should) get

A (mega brief) introduction to the immune system

- This is the group of specialized cells (white blood cells, lymphocytes, etc.) and tissues (lymph nodes) dedicated to fight off invaders
- Systemic lupus erythematosus (SLE, or "lupus") is an autoimmune disease, meaning that in lupus patients, the immune system "gets confused" and attacks the body instead of invaders

How doctors sometimes describe the immune system to patients



But a more accurate depiction...



- People with lupus have an "overactive immune system" but are still at risk for infections
- That is why vaccination is so important

How vaccines work

- Normally when a germ ("pathogen") invades our body, the immune system fights against it
- This fight between the pathogen and our immune system is what makes us sick

How vaccines work

- After the infection is cleared, our immune system retains a memory of the attack, preventing us from getting sick again
- Vaccines are "mimickers" of pathogens that trick our immune system into *thinking* it is being attacked and forming memory, without making us sick





Types of vaccines

I. <u>Live attenuated</u>: the germ is "weakened" in the lab, but not killed. When introduced into the organism, it closely mimics a "real" infection. These are typically contraindicated in patients taking immunosuppressants. Examples: MMR, shingles

II. <u>Inactivated</u>: the germ is **killed** in the lab and its "corpse" is introduced into the organism. Safer but less effective than live vaccines. These are safe even in immunocompromised individuals. Examples: polio (salk), influenza

- In general, live vaccines should be avoided in people under immunosuppressive treatment
- People should not receive vaccines during an active lupus flare, but otherwise inactivated killed vaccines are safe to administer in lupus patients
- Higher immunosuppression may impair vaccine effectiveness but does not confer higher risk of complications from the vaccines

Adult vaccines

- Influenza ("flu shot")
- PCV-13 and PPV-23 ("pneumonia shots")
- Zoster ("shingles")
- Tetanus (Tdap, DTaP, Td)
- Hepatitis B virus (HBV)

Influenza ("flu shot")

- Recommended for all adults annually
- This is an inactivated vaccine, and as such, is safe for use in people who are immunocompromised (such as lupus patients taking immunosuppressants)
- Caution: an aerosolized ("spray") version of the vaccine exists, but this is live attenuated and is contraindicated in immunocompromised individuals

The pneumonia vaccines

- Two vaccines exist: Prevnar (PCV-13) and Pneumovax (PPV-23)
- CDC recommends adults over 65 years of age receive Prevnar followed by Pneumovax 1 year later
- Younger patients at high risk for infections (such as persons with HIV or undergoing immunosuppressive treatment) should be vaccinated as well (with a second dose of Pneumovax 5 years after the first one)

Zoster vaccine ("shingles")

- This is a live vaccine and is therefore contraindicated in patients taking immunosuppressive medications
- CDC recommends adults over the age of 60 receive this vaccine
- If vaccine is given, immunosuppression should be held for 2-4 weeks afterwards

Tetanus vaccine (Tdap, DTaP, Td)

- They are all inactivated vaccines and are therefore safe to administer in immunocompromised individuals
- One dose every 10 years
- Contraindicated in certain neurological conditions, not lupus

Hepatitis B virus (HBV)

- Not recommended for everyone by the CDC
- Inactivated vaccine, safe to administer in immunocompromised individuals
- Usually lupus patients are screened for HBV prior to starting certain treatments (such as Benlysta) and the vaccine may be offered

Take-home messages

- Vaccines are safe and effective in patients with lupus
- In persons receiving immunosuppressant medications, live vaccines (such as the shingles) are contraindicated
- Inactivated vaccines are safe to administer in immunocompromised individuals
- When your doctor offers you the flu shot or the pneumonia shot, please say yes!

Resources

- <u>cdc.gov/vaccines</u>
- <u>lupusil.gov</u>
- Your rheumatologist



