

“BIOLOGICS” IN THE PEDIATRIC POPULATION

Quite recently, biologic drugs have been seen everywhere on television as the new advancement in the treatment against rheumatoid arthritis. These medications are promising and include the more commonly advertised etanercept, adalimumab, anakinra, infliximab, rituxamab and abatacept. Currently, only etanercept is federally approved for children with certain types of arthritis and other autoimmune diseases. The other biologic medications have not yet been approved for use in children. Recommendations to use a biologic response modifier drug on your patient most likely means that conventional disease modifying anti-rheumatic drugs (DMARDs) are no longer effective alone. DMARDs include medicines such as methotrexate.

Biologics are genetically derived proteins from human DNA. These proteins work by interfering with biologic substances that cause or worsen inflammation in our bodies. Etanercept, adalimumab and infliximab inhibit tumor necrosis factor or TNF which is an intercellular chemical protein released by white blood cells to stimulate inflammation. Anakinra acts by blocking interleukin -1 (IL-1), another intercellular inflammatory stimulating protein. Rituxamab binds CD20 positive B cells and prevents them from secreting autoimmune antibodies.

If your patient's disease is mild to moderate, a trial of methotrexate or another DMARD may be enough. With severe disease, a biologic may be used alone or in combination with methotrexate. In the case of infliximab, studies have shown concomitant use with methotrexate helps prevent the development of anti-infliximab antibodies. Biologic drugs are administered either by subcutaneous injection or by intravenous infusion. Pediatric rheumatology nurses educate the parents and the child to administer the shot, in addition to emphasizing proper hygiene. Anakinra, etanercept, and adalimumab are all administered by subcutaneous injection daily, weekly, every other week or bi-weekly depending on medication and dose. These medications need to be refrigerated and warmed to room temperature just prior to use. Remicaide is given by intravenous infusion either at a hospital or an infusion clinic. After administration of a few doses, most patients will start to notice a decrease in swelling and pain. Most studies report improvement in 4-6 weeks.

While biologic drugs are very promising, there are concerning issues regarding the potential for infection and important side effects to be aware of. Skin reactions may occur at the site of the injection. Patients will complain of itching, burning and a localized rash at the site. Anakinra usually causes a skin reaction that can last for 10-14 days. With etanercept and adalimumab, the skin reactions may last up to a week. None of the injection skin reactions should leave a scar. It is very important to place a tuberculosis (TB) positive protein purified derivative (PPD) skin test prior to beginning any anti-TNF medication which includes etanercept, adalimumab or infliximab. Anti-TNF medications can activate latent TB. If a child has a positive PPD test, treatment with anti-TNF medications should not be started. The child should be assessed for active TB and treated as necessary. If your patient has an active infection or fever, the patient should hold their biologic medication and methotrexate and be evaluated. Allergic reactions may occur with any of the biologics. Rare neurologic and autoimmune complications have been reported while on anti-TNF medications. Patients with multiple sclerosis and congestive heart failure should not be put on anti-TNF drugs. Long term risks are still unknown.

Biologics are the new class of anti-inflammatory drugs used in various autoimmune diseases such as arthritis, uveitis, and inflammatory bowel disease. They are immunosuppressive and can increase the risk of infection, but overall are quite safe and well tolerated. With proper evaluation, including a PPD skin test, periodic blood checks, serial evaluations and close monitoring for infections, pediatric patients do quite well on biologics and DMARDs. For more information, please refer to these web sites:

www.rheumatology.org/public/factsheet/ra_new.asp

<http://www.arthritis.org>

About the Author

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Dr. Vora completed her Medical Schooling at the University of California-Los Angeles before coming to Wisconsin for her fellowship. She also attended UCLA for her residency, which she fulfilled in 2001. Currently, Dr. Vora is beginning her third year in the Pediatric Rheumatology Fellowship Program at the Medical College of Wisconsin.

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