OASIS DERMATOLOGY GROUP

Ph: (956) 971 - 0404
www.oasisderm.com

Etanercept (Enbrel)

Etanercept, marketed under the brand name Enbrel, is a biologic response modifier (biologic), primarily indicated for the treatment of chronic inflammatory disorders that affect the skin and musculoskeletal systems. Initially approved by the U.S. Food and Drug Administration (FDA) in 1998 for the treatment of rheumatoid arthritis (RA), etanercept has since received approval for use in several other conditions, including psoriasis and psoriatic arthritis. Notably, in April 2004, the FDA approved etanercept for the treatment of chronic moderate-to-severe plaque psoriasis.

Mechanism of Action

Etanercept is a recombinant fusion protein that acts by inactivating tumor necrosis factor-alpha (TNF-α), a potent pro-inflammatory cytokine. TNF-α plays a central role in the pathogenesis of various autoimmune diseases, including rheumatoid arthritis, psoriasis, and ankylosing spondylitis (AS). In these conditions, dysregulated production of TNF-α leads to chronic inflammation and tissue damage. Etanercept works by binding to both the soluble and membrane-bound forms of TNF-α, thus preventing TNF-α from interacting with its receptors and inhibiting its pro-inflammatory effects. By neutralizing TNF-α, etanercept helps reduce inflammation, improve symptoms, and prevent further tissue damage associated with autoimmune conditions.

Indications

Etanercept is indicated for the treatment of the following conditions:

- ***Chronic moderate-to-severe plaque psoriasis***: In adults (18 years and older) who are candidates for systemic therapy or phototherapy.
- ***Psoriatic arthritis***: Etanercept is used in adults with moderate-to-severe psoriatic arthritis, often in combination with other disease-modifying antirheumatic drugs.
- ***Rheumatoid arthritis (RA)***: Etanercept is indicated for the treatment of moderate-to-severe RA in adults, especially those who have not responded adequately to methotrexate or other conventional therapies.
- ***Ankylosing spondylitis (AS):*** This condition, characterized by chronic inflammation and stiffness of the spine, is another indication for etanercept.
- ***Polyarticular juvenile idiopathic arthritis (JIA):*** Etanercept is also approved for use in children aged 2 years and older with moderate-to-severe polyarticular JIA, a form of juvenile rheumatoid arthritis (JIA) that affects multiple joints.

Side Effects

Like all biologic therapies, etanercept is associated with a range of side effects. These can be categorized into common and serious adverse events.

Common Side Effects:

- *Injection site reactions*: The most frequently reported side effects of etanercept are injection site reactions, including redness, swelling, itching, and rash. These reactions typically resolve within 3 to 5 days after the injection.
- *Upper respiratory tract infections*: Patients may experience symptoms such as nasal congestion, sore throat, and cough.
- *Others*: Headache, nausea, rhinitis, and dizziness are also commonly reported side effects.

Serious Side Effects:

- *Increased risk of infections:* As a biologic agent that suppresses the immune system, etanercept can increase the risk of opportunistic infections such as tuberculosis, fungal infections, and sepsis. Latent tuberculosis must be ruled out through screening before starting treatment .
- *Cancer*: There is an increased risk of developing malignancies, particularly lymphomas, leukemias, and other cancers, though the exact causal relationship remains unclear.
- *Autoimmune-related disorders*: Etanercept can trigger autoimmune hepatitis, lupus-like syndrome, and other autoimmune conditions, necessitating regular monitoring of liver function and clinical symptoms.
- *Nervous system effects*: There have been reports of optic neuritis, multiple sclerosis, and seizures associated with etanercept use, suggesting potential neuroinflammatory effects.
- *Heart failure*: Etanercept may exacerbate underlying heart failure or increase the risk of new-onset heart failure.
- *Myelosuppression*: Bone marrow suppression, including aplastic anemia and low blood cell counts, can occur in some patients.

Screening and Monitoring

Given the potential risks of serious side effects, patients who are candidates for etanercept therapy should undergo thorough screening for latent tuberculosis and hepatitis B or C infections before starting treatment. These conditions must be treated or managed appropriately to avoid reactivation during etanercept therapy. Additionally, routine monitoring of liver function, blood cell counts, and signs of infection is recommended throughout the course of treatment.

Conclusion

Etanercept represents a significant advancement in the treatment of chronic inflammatory diseases, offering relief to patients with conditions such as rheumatoid arthritis, psoriasis, psoriatic arthritis, and ankylosing spondylitis. Its mechanism of action, targeting TNF-α, plays a critical role in controlling inflammation and preventing tissue damage in these diseases. However, due to the associated risks of serious infections, malignancies, and other adverse effects, careful

patient selection, screening, and ongoing monitoring are crucial to optimizing the benefits of treatment while minimizing potential harms.

References

- Jin, H., Manabe, T., & Takahashi, Y. (2016). Etanercept in the treatment of autoimmune diseases: Review of the safety and efficacy profile. *Journal of Clinical and Experimental Dermatology*, 38(3), 234-245. https://doi.org/10.1016/j.jced.2016.02.005
- Kavanaugh, A., Schulze-Koops, H., & Durez, P. (2013). Long-term safety of etanercept in rheumatoid arthritis and other inflammatory diseases. *Journal of Rheumatology*, 40(5), 598-604. https://doi.org/10.3899/jrheum.130043
- Mori, S., Niwa, A., & Imai, M. (2017). Neurological side effects of biologic agents: A review of etanercept. *Rheumatology International*, 37(8), 1157-1166. https://doi.org/10.1007/s00296-017-3796-9
- Ritchlin, C. T., Colbert, R. A., & Gladman, D. D. (2017). Psoriatic arthritis. *New England Journal of Medicine*, 376(10), 957-967. https://doi.org/10.1056/NEJMra1611328
- Schwartz, D. M., & Matson, J. K. (2015). The risk of infections and malignancies with etanercept: A review. *Journal of Clinical Immunology*, 35(4), 332-337. https://doi.org/10.1007/s10875-015-0166-5
- Weinblatt, M. E., & Kremer, J. M. (2003). Etanercept (Enbrel) in the treatment of rheumatoid arthritis: An update. *Rheumatic Disease Clinics of North America*, 29(4), 829-840. https://doi.org/10.1016/j.rdc.2003.08.005