Remicade and Friends—What You Need to Know
Treating the Patient on TNF-alpha Inhibitors and Related Meds

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Acknowledgements

• Some slides provided by:
  • Michael Knipp, MD
  • Qiagen
  • Quest
  • Oxford Immunotec

• Special thanks to:
  • Dr. Richard B. Clark, PhD, D(ABMM)
    Scientific Director of Microbiology/Virology
    Quest Diagnostics Nichols Institute
  • Dr. Michael Knipp MD, Parkview Occupational/Employee Health
Disclosures

• Nothing financial to disclose
• I am an Infusionist
• Board Member, Out-Patient IntraVenous Infusion Therapy Association (OPIVITA)
Biological Response Modifiers

- TNF-alpha Antagonists
  - Etanercept (Enbrel)
  - Infliximab (Remicade)
  - Adalimumab (Humira)
  - Certolizumab pegol (Cimzia)
  - Golimumab (Simponi)
- Tysabri
What conditions?

- Rheumatoid arthritis
- Ulcerative colitis
- Crohn’s disease
- Psoriasis
- Seronegative spondyloarthropathies (such as ankylosing spondylitis)
Biologics—Adverse events reported

- Injection site reactions
- Infusion reactions
- Neutropenia
- Infections
- Demyelinating disease (17 cases)
- Heart failure
- Cutaneous reactions
- Malignancy (Hepatosplenic lymphoma)
- Induction of autoimmunity
Infectious Complications

- TB
- Mycobacterium avium
- Mycobacterium bovis
- Bacillus Calmette-Guerin
- Hepatitis A
- Hepatitis B

- Toxoplasma gondii
- Fungal infections
  - Histoplasmosis
  - Blastomycosis
  - Coccidiomycosis
  - Candida
  - Aspergillus fumigatus
  - Cryptococcus neoformans

*What do these infection have in common?*
What are Helper T Cells?

- Pick up antigen from
  - Macrophages
  - Dendritic cells
- Presents to B Cells
- B Cells (CD19) become Plasma cells
- Plasma Cells make AB
- PMNs kill cells bound with antibody
Helper Cells

Th1
- Antiviral/Fungal/Bacteria
- Aggressive
- Promotes cytotoxic T-cell development
- Anti-tumor
- I have never seen a case of Rheumatoid with Hep C
- Downside—Psoriasis, UC, Crohn’s, RA, Spondyloarthropathies (such as ankylosing spondylitis)

Th2
- Tolerant
- Downside—Lymphoma, skin cancers
- Role in anti-parasite activity
- Increases associated with atopy and asthma
• Cytotoxic T Cell Example: PPD, graft vs host

• CD4 pathway Example: Viral infection, bacterial infection
What do they do?

- Stimulate release of inflammatory cytokines interleukin IL-1 beta, IL-6, IL-8 and GM-CSF
- Up regulate endothelial adhesion molecules, chemokines
- Coordinate the migration of leukocytes to targeted organs
TB Granuloma

Note the palisade or “picket fence” appearance with central necrosis

Histiocytes, or activated T cells prevent growth of the pathogen (TB in this case)
Initial Screening

- TB—Quantiferon gold or Tspot
- Fungal Infections (serum fungal battery or serum immunodiffusion panel)
- Hepatitis A total (vaccinate if negative)
- Hepatitis B Sab (vaccinate if negative)
- Hepatitis B Sag (hold treatment if positive)
- Hepatitis C Ab
- CBC/BMP/Hepatic profiles
- VZV Vaccine *prior* to initiation of TNF-inhibitor
At Risk for Infection

- Septic arthritis with Staph Aureus
- Listeriosis
- Legionella pneumonia
- Hep B/C
- Nocardia/non-TB bacteria
- TB
- Fungal (including histo/blasto/cocci/crypto/Aspergillus)
- Pneumocystis
Screening and Vaccinations on Therapy

• TB Screen (PPD, Tspot, Quantiferon gold) -- yearly
• Flu shot — yearly
• Pneumovax — at least once
• CBC/BMP/Hepatic profile every 6 months, more often if abnormalities are found, or if patient has evidence of brewing infection (unexplained fevers, weight loss, night sweats)
Controversies

- HPV vaccination
- TNF-alpha antibody monitoring
- Pneumovax ever 6 years
- HIB
- Prior PUVA—increased risk of skin cancer
- COPD—increased risk of cancer
- Live attenuated vaccines such as FluMist, VZV Vaccines, BCG—increased risk of infection
- VZV vaccine
- Post-surgical healing and SSI
- What to do with Ortho patients?
TB occurring while on TNF-inhibitor therapy

- Stop TNF inhibitor until TB regimen started and patient condition improved.
- Optimal time to restart TNF inhibitor is undetermined
- Glucocorticosteroids during treatment for TB is considered safe