

Conversion to positive latent tuberculosis infection in hidradenitis suppurativa patients on tumor necrosis factor inhibitors



Katherine Byrnes, R. Hal Flowers MD
University of Virginia



Background

- Hidradenitis suppurativa (HS), a chronic inflammatory skin disease, can be treated with tumor necrosis factor inhibitors (TNFis).
- TNFis increase tuberculosis (TB) reactivation risk, so latent TB infection (LTBI) testing is advised before treatment.
- Some organizations recommend periodic LTBI screening for patients on TNF-inhibitors but recommendations vary^{1,2} and sparse evidence exists for HS patients^{3,4}.
- Virginia's 2022 TB incidence rate was 2.2⁵ per 100,000.

Methods

- We sought to determine the LTBI conversion rate among HS patients on the TNFis adalimumab or infliximab and identify factors associated with seroconversion.
- We reviewed 269 charts of HS patients initiated on adalimumab or infliximab between 2000 and 2023.
- Included patients had treatment for 3+ months and a baseline Interferon-Gamma Release Assay (IGRA) test or tuberculin skin test (TST) plus at least one test after treatment or multiple tests 4+ months apart if no baseline.
- Patients with positive baseline tests or no IGRA results were excluded.
- We collected patient age, sex, TNFi, treatment duration, concomitant immunosuppressives, prior treatment with biologics, TB risk factors, and additional chronic inflammatory disease or follicular occlusion tetrad diagnoses.

Results

- Study cohort: 92 patients (median age at TNF-inhibitor start: 35.5 years)
- Average total observation time on adalimumab and/or infliximab: 37.4 months (3.1 years)
- Median IGRA tests per patient: 3
- Out of 269 QFTs reviewed, 268 were negative, 1 indeterminate, and 0 positive.
- No positive TSTs
- Positive conversion rate: 0%

Conclusion

- In our single-center study, no HS patients on adalimumab or infliximab had positive LTBI results.
- Our results can inform clinicians in weighing the clinical utility of serial LTBI screening in HS patients treated with TNFis, with consideration of individual risk factors and local TB prevalence.
- This central Virginia patient population is likely very low risk
- Further studies on larger populations are needed to develop evidence-based screening guidelines to optimize resource use and reduce harm posed by possible over-screening.

References

- Kardos M, Kimball AB. Time for a change? Updated guidelines using interferon gamma release assays for detection of latent tuberculosis infection in the office setting. *J Am Acad Dermatol.* 2012;66(1):148-152. doi:10.1016/j.jaad.2011.09.007
- Singh JA, Saag KG, Bridges Jr. SL, et al. 2015 American College of Rheumatology Guideline for the Treatment of Rheumatoid Arthritis. *Arthritis Rheumatol.* 2016;68(1):1-26. doi:10.1002/art.39480
- Ellis A, Khanna U, Galadari A, Fernandez AP. Conversion to positive latent tuberculosis infection status is low in patients with hidradenitis suppurativa taking biologic medications. *J Am Acad Dermatol.* 2020;83(1):246-248. doi:10.1016/j.jaad.2020.01.012
- Fernandez AP, Ellis A, Khanna U, Galadari A. Reply to: "Evidence-based guidelines for tuberculosis screening before biologic treatment initiation." *J Am Acad Dermatol.* 2020;83(1):e27-e28. doi:10.1016/j.jaad.2020.03.039
- Table 25 | Reported TB in the US 2022 | Data & Statistics | TB | CDC. Published November 14, 2023. Accessed January 8, 2024. <https://www.cdc.gov/tb/statistics/reports/2022/table25.htm>

Table I. Patient Characteristics, TB Risk Factors, and IGRA Results

Items	N=92
Sex, n pts (%)	
Male	31 (33.7%)
Female	60 (65.2%)
Transgender Female	1 (1.1%)
Age at initiation of TNF-inhibitor [median (range)]	35.5 (9-76)
TNF-inhibitor use (n pts)	
Adalimumab only	45
Infliximab only	3
Adalimumab and Infliximab	44
Adalimumab (total)	89
Infliximab (total)	47
Average total observation time on TNF-inhibitor, months (SD*)	37.4 (29.9)
Median observation time on TNF-inhibitor, months (range)	30 (3-175)
Comorbid follicular occlusion tetrad diagnoses, n pts (%)	
Acne conglobata	0
Dissecting cellulitis of scalp	4 (4.3%)
Pilonidal Cyst	6 (6.5%)
Comorbid chronic inflammatory or autoimmune disease, n pts (%)	
Ankylosing spondylitis	1 (1.1%)
Asthma	3 (3.3%)
Crohn's disease	5 (5.4%)
Atopic dermatitis	5 (5.4%)
Juvenile idiopathic arthritis	2 (2.2%)
Systemic lupus erythematosus	1 (1.1%)
Polycystic ovarian syndrome	3 (3.3%)
Psoriasis	3 (3.3%)
Pyoderma gangrenosum	1 (1.1%)
Rheumatoid arthritis	7 (7.6%)
Sarcoidosis	1 (1.1%)
Concomitant immunosuppressive medications, n pts (%)	
Azathioprine	3 (3.3%)
Cyclosporine	1 (1.1%)
Leflunomide	1 (1.1%)
Methotrexate	14 (15.2%)
Long-term prednisone (>30 days)	8 (8.7%)
Total	28 (30.4%)
Documented TB risk factors, n pts (%)	
Immigration or travel from high-risk area	1 (1.1%)
Occupational/social exposure*	3 (3.3%)
Contact with infected persons	1 (1.1%)
Disease associated with immunosuppressed state**	22 (23.9%)
IGRA Results, n tests	
Total performed	269
Mean tests per patient (SD)	2.92 (1.43)
Median tests per patient (range)	3 (1-8)
Positive results	0
Indeterminate results	1
Negative results	268

*Occupational/social exposure defined as documented incarceration during time on TNF-inhibitor (2 patients) or documented TB risk in occupation (1 patient)
 **Included active cancer during time on TNF-inhibitor (meningioma, ovarian cancer, prostate cancer, lung cancer, melanoma; 4 patients), type I (1 patient) or type II diabetes mellitus (17 patients)

Disclosure Page

Dr. Flowers serves as a principal investigator for Abbvie, Acelyrin, Regeneron/Sanofi and Sun Pharmaceuticals. He has served on advisory boards for Argenx, Bristol-Myers Squibb and Janssen. Author Byrnes has no conflicts of interest to declare.