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The Utility of Frequent Laboratory Monitoring for Patients on Tumor Necrosis Factor-Alpha Inhibitors in Dermatology

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ABSTRACT

Introduction. Tumor necrosis factor-alpha inhibitors (TNF-ai) are becoming increasingly common to use among patients with skin disease. To safely take these medications, it is recommended to monitor laboratory values routinely; however, the utility of this practice and the risk-benefit of frequent laboratory monitoring has not been explored fully in patients with skin disease. The purpose of this study was to evaluate the necessity of routine laboratory monitoring in patients taking a TNF-ai with a dermatological disease.

Methods. Retrospective chart review evaluated laboratory abnormalities (complete blood counts and liver function tests) in adult patients who took a TNF-ai for a dermatologic disease at The University of Kansas Hospital.

Results. There were 27 patients included for a total of 45 entries. The most common skin disease was hidradenitis suppurativa (23/45) and infliximab (22/45) was most the commonly used medication. Of the 45 entries, there were only seven patients that developed abnormal monitoring laboratory values related to initiation of TNF-ai. These abnormalities were transient and most frequently occurred after 12 months, with 2 of the 45 resulting in no discontinuation or dose reduction of TNF-ai. One patient discontinued medication due to anemia that did not improve after medication withdrawal.

Conclusions. Laboratory abnormalities due to TNF-ai were infrequent and when they did occur were transient and mild. The study was limited by the small sample size of patients, and larger prospective studies are needed to evaluate these findings fully. However, dermatologists may be able to employ less frequent laboratory monitoring safely for patients on TNF-ai. ***Kans J Med 2022;15:212-214***

INTRODUCTION

Tumor-necrosis-factor alpha inhibitors (TNF-ai) have been proven beneficial for dermatologic diseases such as psoriasis and hidradenitis suppurativa, among others.[1] It was recommended to monitor for laboratory abnormalities from baseline to every three months, although no published guidelines exist for the vast majority of skin diseases, except for psoriasis.[2,3]

Excessive monitoring comes at an inconvenience to patients and increases health care costs to the patient in the form of burden (i.e., travel, time, expenses, blood draws) or prematurely stopping a treatment regimen without evidence that continuing will result in complications.[4] However, it is important to ensure patient safety by appropriately screening patients for potentially dangerous abnormalities. The purpose of this retrospective study was to evaluate when and how severe adverse laboratory events were experienced to determine if less frequent laboratory monitoring can be employed in adults taking TNF-ai for a variety of skin diseases.

METHODS

An IRB approved retrospective review was conducted to assess our patient experiences. To be included in the study, patients (1) received dermatology care at The University of Kansas Health System (TUKHS), (2) were prescribed a TNF-ai for a skin condition, (3) were compliant with laboratory monitoring and the medication, and (4) were ages 18 or older. Patients consecutively treated with adalimumab, etanercept, certolizumab, golimumab, and infliximab could contribute data to all biologics. Laboratory values of interest included a complete blood count, liver function tests, and inflammatory markers. Quantitative data were reported as counts and percentages.

RESULTS

Twenty-seven participants included in the study contributed data for 45 entries (Table 1). The majority of patients took infliximab (n = 22), followed by adalimumab (n = 17), etanercept (n = 4), and golimumab (n = 2). While 19 patients had baseline abnormalities, this did not prevent the initiation of medication. Only seven patients developed abnormal laboratory values after initiation of TNF-ai, with the majority occurring after 12 months and returned to baseline by the following laboratory draw (n = 6; Table 1). These abnormalities were presumed related to initiation of TNF-ai. However, given the abnormalities were transient, there was no discontinuation or reduction of dose. Only one patient with baseline laboratory abnormalities had to discontinue infliximab due to severe anemia that did not improve despite medication withdrawal.

DISCUSSION

Our study evaluated the utility of routine laboratory monitoring for patients with skin disease taking a TNF-ai. Adverse laboratory events that developed while taking the TNF-ai were rare and, when they did occur, they were transient and resolved by the following laboratory draw. A prospective trial evaluating psoriatic patients on etanercept and adalimumab concluded routine laboratory monitoring for those two TNF-ai may be unnecessary, as the abnormalities noted were either transient, present at baseline, or unrelated to the medication and did not result in a reduction of discontinuation of the drug, similar to our findings.[5] However, our study evaluated two additional TNF-ai and expanded over a wider range of skin diseases that have not been evaluated previously. A review reported adverse events of TNF-ai for patients diagnosed with either rheumatoid arthritis or Crohn's disease and concluded that laboratory adverse events, such as hepatotoxicity or cytopenia, are exceedingly rare, suggesting, similar to our current study, that less frequent monitoring may be appropriate.[6]

Our study was limited by the number of patients that met inclusion criteria. Larger, prospective studies are needed to appreciate more fully the utility of routine laboratory monitoring in adult patients taking a TNF-ai for a skin condition. Nonetheless, based on our findings and the established data, dermatologists safely may be able to evaluate laboratory monitoring less frequently.

Table 1. Demographics and timing of laboratory abnormalities per medication.

	Infliximab	Adalimumab	Etanercept	Golimumab
Number of patients	22	17	4	2
Age in years, median (range)	39.5 (20-78)	33 (19-73)	51.5 (29-73)	55.5 (43-68)
Male: Female	6: 16	6: 11	1: 3	1: 1
Diagnosis				
Hidradenitis suppurativa	11	12	0	0
Pyoderma gangrenosum	6	1	1	0
Psoriasis/psoriatic arthritis	5	4	3	2
Exposure to drug in months, median (range)	6.1 (3.6-57.8)*	19.3 (3.3-89.7)	5.2 (4.5-83.0)	24.1 (11.4-36.7)
Baseline abnormality	11	4	2	2
Resolved	5	1	1	2
Continued, duration in months	5	3	1	0
Duration in months, (range)	7.5 (3-48)	6 (6-18)	3	
Discontinued drug due to abnormality	1[β]	0	0	0
Monitoring abnormality	1	5	0	1**
Resolved	1	5	0	1**
Continued in months, duration	0	0	0	0
Discontinued drug due to abnormality	0	0	0	0
Timing of abnormality				
Baseline	11/12	4/9	2/2	2/2
After baseline and < 6 months	1/12	0	0	0
≥ 6 months and < 12 months	0	0	0	0
≥ 12 months and < 18 months	0	1/9	0	1**
≥ 18 months	0	4/9[α]	0	1**
Discontinued, n	7	15	3	2
No benefit	3	13	1	2
Allergy	2	1	0	0
Laboratory abnormality	1	0	0	0
Infection	0	1	1	0
Pregnant	1	0	0	0
Not stated	0	0	1	0

*One patient discontinued at day 1 of infusion due to drug allergy.
**This patient also had baseline abnormality that resolved. Patient had transient leukocytosis at 12, 24, and 36 months that all resolved at following laboratory draws.
[α]Transient laboratory abnormalities at 18, 27, and 51 months.
[β]Patient had chronic anemia that did not improve despite discontinuing infliximab.
Note: *BL*: baseline; *Resolved*, abnormality was not present by subsequent laboratory draw. Resolved abnormalities were not present at the following 3-month laboratory draw.

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