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Research Article

Pharmacotherapy of Hidradenitis Suppurativa: A Comparison of Clinical Response with Adalimumab and Secukinumab

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Abstract

Hidradenitis Suppurativa is a disease that affects millions worldwide. Research indicates that people suffering from hidradenitis suppurativa respond well to monoclonal antibody treatment aimed at characteristic immune cell markers. By targeting immune cell markers, the immune system is subsequently suppressed in a way such that disease activity is decreased. Monoclonal antibody treatments targeted towards a variety of immune cell markers have historically been shown to result in decreases in hidradenitis suppurativa disease activity. Many studies have assessed disease activity with monoclonal antibody treatments, but few have compared different treatments.

A systematic review of a study that assessed the disease activity for those taking adalimumab was then compared to the findings of another study which assessed the disease activity with those taking secukinumab.

The patients treated with adalimumab had significantly decreased hidradenitis suppurativa activity when compared with other matched controls. Those who were treated with secukinumab had significantly decreased disease activity when compared with other matched controls. However, those who were treated with secukinumab had a greater reduction of disease activity as compared to control groups than did those who were treated with secukinumab.

Monoclonal antibody treatments for hidradenitis suppurativa are widespread. It is critical that these treatments are compared in order to find those with the greatest efficacy. For this review, secukinumab seemed to have a greater reduction of disease activity than did adalimumab. Further studies with greater sample sizes are needed to conclude which has greater efficacy.

Keywords: hidradenitis suppurativa; adalimumab; secukinumab, autoimmune disease; monoclonal antibody therapy; inflammatory skin disease

Introduction

There is sufficient information to suggest that persons suffering from hidradenitis suppurativa respond well to monoclonal antibody therapy [1]. Two prominent monoclonal antibody treatments for the treatment of hidradenitis suppurativa are the anti-tumor necrosis factor-α agents such as adalimumab and the anti-interleukin-17 (anti-IL-17) agents such as secukinumab [1,2].

Anti-tumor necrosis factor-α agents such as adalimumab are directed towards tumor necrosis factor-α, which induces chemokines production such as CXCL8, CXCL11, CCL20, and CCL2 in keratinocytes [1]. Consequently, the chemokine release and endothelial cell activation result in a significant immune cell infiltration of the forming lesions known to be hidradenitis suppurativa [1]. IL-17 inhibitors such as secukinumab inhibit the IL-17-mediated cascade which is believed to be highly implicated in the pathogenesis of hidradenitis suppurativa [2].

It is well known that both of these monoclonal antibody therapies have significant effects in reducing Hidradenitis Suppurativa Clinical Response (HiSCR) scores, but little has been done to compare their efficacies [1,2]. This is especially important to know such that a physician can prescribe the best pharmacological intervention to treat a patient with hidradenitis suppurativa.

Methods:

For the study conducted using adalimumab [3]:

A total sample size of 633 patients were collected and treated in two manipulated groups, denoted as PIONEER I (period 1) and PIONEER II (period 2). In period 1, patients were randomly assigned in a 1:1 ratio to 40 mg of adalimumab weekly or matching placebo for 12 weeks. In period 2, patients were reassigned to adalimumab at a weekly or every-other-week dose or to placebo for 24 weeks. The primary endpoint was a hidradenitis suppurativa significant clinical response (HiSCR) , defined as at least a 50% reduction from baseline in the abscess and inflammatory-

nodule count, with no increase in abscess or draining-fistula counts, at week 12.

For the study conducted using secukinumab [2]:

Following a loading dose of five weekly injections of secukinumab 300 mg subcutaneously (SC), participants in the active arms were randomized to receive either secukinumab 300 mg SC every four weeks (Q4W) or every 2 weeks (Q2W) until week 16. 541 participants received 300mg secukinumab every four weeks while 543 subjects received 300mg secukinumab every 2 weeks. Both treatment groups were compared to a randomized placebo group.The endpoint was achieving an HiSCR after 16 weeks.

Results:

For the study conducted using adalimumab (3):

For patients treated with adalimumab, the HiSCR achievement rate was significantly greater than those treated with a placebo (41.8 vs. 26%, $p = 0.003$ in PIONEER I and 58.9 vs. 27.6%, $p < 0.001$ in PIONEER II). Furthermore, in the PIONEER II, ADA was demonstrated to be remarkably more effective than the placebo in secondary outcomes, such as disease severity, pain reduction, and the number of skin lesions.

For the study conducted using secukinumab (2):

A greater proportion of patients treated with secukinumab achieved HiSCR by week 16 compared with placebo. However, only the Q2W dosing regimen achieved a significant difference vs. placebo (45% Q2W secukinumab vs. 34% placebo, $p = 0.007$; 42% Q4W secukinumab, $p=0.042$), while statistical significance was observed with both treatment regimens in SUNRISE (42% Q2W secukinumab, $p = 0.015$; 46% Q4W secukinumab, $p = 0.002$; vs. 31% placebo).

Treatment	Percent Achieving HiSCR (%)	p-value
Q2W Secukinumab	45	0.007
Q4W Secukinumab	42	0.042
Adalimumab PIONEER I	42	0.003
Adalimumab PIONEER II	59	0.001

Table 1: HiSCR Results for Both Treatments

The above table (**Table 1**) depicts the percentage achieving HiSCR and p-values for each of the treatment groups in each study. All groups treated with monoclonal antibodies had statistically significant increases in HiSCR when compared to placebo groups.

Conclusion:

Our analysis suggests that while both adalimumab and secukinumab are effective in reducing hidradenitis suppurativa disease activity, adalimumab did so by almost 15% more than the biweekly-treated secukinumab group. This also indicates that tumor necrosis factor-α is likely more implicated in hidradenitis than the interleukin-17-mediated cascade. The analyses are limited in the sense that they both couldn't accurately control for the severity of hidradenitis suppurativa and comorbidities. Additionally, the length of both research studies could not be controlled. There is also the likelihood that there is another immune marker that may be even more implicated in the pathogenesis of hidradenitis suppurativa than tumor necrosis factor-α and interleukin-17. Also, further studies must be conducted with larger sample sizes controlling for age and other demographic factors. While adalimumab shows promising results, there is plenty more investigation that must be conducted to find the most effective monoclonal antibody treatment for hidradenitis suppurativa.

Compliance with Ethical Standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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