

### c. Induction Phase and Maintenance Phase for Clinical Trials on RA

Bolge et al. (74) reviewed drugs, such as infliximab, that are used in various clinical trials on rheumatoid arthritis (RA), and described the use of induction phases and maintenance phases in these trials. Infliximab is an antibody that binds to tumor necrosis factor- $\alpha$  (75).

Commenting on these phases, the Bolge et al. (76) stated that, "Infliximab has been shown to reduce signs and symptoms of RA, inhibit the progression of structural damage, and improve physical function in patients with moderately to severely active RA. For this indication, the US Food and Drug Administration (FDA) recommends that infliximab, in combination with methotrexate, be administered at 3 mg/kg at weeks 0, 2, and 6 (induction period) and every 8 weeks thereafter (maintenance period)."

### d. Induction Phase and Maintenance Phase for a Clinical Trial on Psoriasis

In an exemplary account of a clinical trial on the autoimmune disease, psoriasis, Gordon et al. (77) disclose the use of an induction phase and a maintenance phase. The induction phase lasted from weeks 0 to 12, and the maintenance phase was from weeks 12 to 52. The study drug was briakinumab, an

antibody that binds to interleukin-23 (IL-23). IL-23 is a cytokine that is highly expressed in psoriasis skin lesions. Initially, the subjects were randomized to the study drug arm (briakinumab) or placebo arm. Then, after completing the induction phase, subjects were rerandomized to a study drug arm or placebo arm. In other words, after the induction phase, subjects from the study drug arm were rerandomized to study drug or placebo, and also subjects from the initial placebo arm were then rerandomized to either study drug or placebo.

## VI. CONCLUSIONS

Neoadjuvant therapy and adjuvant therapy are mainstream topics in oncology. These terms refer to the pairing of sequential steps of therapy, that is, chemotherapy followed by surgery, or surgery followed by chemotherapy. Therapy of certain autoimmune diseases also involves sequential steps of treatment. These steps are called induction therapy and maintenance therapy. Because this chapter resides at an early part of this textbook, and because this book's emphasis includes oncology and autoimmune diseases, it is fitting that an account of the sequential steps used in autoimmune diseases be included at this point.

<sup>74</sup>Bolge SC, et al. Comparative multidatabase analysis of dosing patterns and infusion intervals for the first 12 infliximab infusions in patients with rheumatoid arthritis. *Clin. Ther.* 2012;34:2286–92.

<sup>75</sup>Takeuchi T, et al. Prediction of clinical response after 1 year of infliximab therapy in rheumatoid arthritis based on disease activity at 3 months: posthoc analysis of the RISING study. *J. Rheumatol.* 2015;42:599–607.

<sup>76</sup>Bolge SC, et al. Comparative multidatabase analysis of dosing patterns and infusion intervals for the first 12 infliximab infusions in patients with rheumatoid arthritis. *Clin. Ther.* 2012;34:2286–92.

<sup>77</sup>Gordon KB, Langley RG, Gottlieb AB, et al. A phase III, randomized, controlled trial of the fully human IL-12/23 mAb briakinumab in moderate-to-severe psoriasis. *J. Invest. Dermatol.* 2012;132:304–14.