CHAPTER 5

CONCLUSION

Seventy two patients were completely followed up for their respiratory disorder treatment with theophylline, the results from this study were concluded as follows:

1. Theophylline was given by two means, one mean is according to the physician traditional dosage regimen (control group) and the other mean is according to theophylline dosage program (study group). In overall patients (control group + study group), serum theophylline concentrations calculated by theophylline dosage program ($C_{predict}$) and measured theophylline level (C_{real}), were not statistically significant different. From this study, Theophylline dosage program could be utilized to start and adjust dose of theophylline in each patient. The predicted theophylline serum level derived from overall patients (control group and study group) (12.701 mcg/ml) was not statistically significant different from the actual theophylline serum level (12.486 mcg/ml).

2. With the therapeutic range categorized as an interval of 10-15 mcg/ml, the control group patients had theophylline serum concentrations respectively ranked in therapeutic, subtherapeutic and toxic ranges (13.88%, 52.78%, and 33.34%). Meanwhile, in the study group, the majority of patients had theophylline serum concentrations in therapeutic range (55.56%), whereas some possessed subtherapeutic range (25%) and toxic range (19.44%). In addition, there were three patients who had no adverse reactions while theophylline serum concentrations were in the toxic range.

It is suggested that calculation dose of theophylline from Theophylline dosage program might increase efficacy and decrease toxicity leading to lower work load of pharmacist as well as cost of treatment.

3. The adverse reactions of theophylline occurred most frequently with theophylline serum concentrations in toxic ragne (73.91%). Although, 21.74% whose theophylline serum concentrations in therapeutic range showed sign of adverse effect whereas one with subtherapeutic range did. Type of adverse reactions occur most often in nervous system (59.09%) such as headache, dizziness, nervousness, insomnia, CVS (22.73%) such as pulse rate higher than 100 bpm, and GI tract (18.18%) such as nausea vomiting and abdominal pain. The fact that such an adverse reaction is not readily predictable from the drug concentrations alone. It may be due to the differences in genetics, the drug bioavaillability, physiological thresholds as well as other confounding factors.

4. After three days of theophylline administration, most of patients (81.95%) had improved clinical response, only 18.05% that had no response. In this study, most of patients use theophylline in combination with other drugs such as salbutamol, ipratropium and steroid to achieve a possible synergistic effect. Therefore, we could not conclude that using theophylline could improve clinical response. Twelve patients had good clinical response while theophylline level was in subtherapeutic range and seven patients had no clinical response while theophylline level was in therapeutic range. The relationship between theophylline level and clinical response could not definitely established.

This study demonstrates that application of pharmacokinetics to obtain and adjust the individual theophylline dosage regimen resulted in less toxic serum concentration (19.44% *VS* 33.34%). The use of Theophylline dosage program may accomplishe the better clinical response by:

(a) Achieving faster therapeutic serum drug concentrations,

(b) Decreasing the number of drug concentrations outside the therapeutic range, thereby decreasing the incidence of toxicity and subtherapeutic concentrations and possibly decreasing morbidity/mortality.

Theophylline dosage program could utilize to calculate dose of theophylline and refill prescription by pharmacists which are useful starting points, but further adjustments based on serum concentration data are warranted.