Cost effectiveness analysis of additional NK-1 receptor antagonist to ondansetron, olanzapine and dexamethasone regimen for prevention of chemotherapy-induced nausea and vomiting in patients receiving high dose cisplatin.

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Background: Currently, three-drug regimen including olanzapine, ondansetron and dexamethasone is the standard reimbursable anti-emetic regimen in chemotherapy-induced nausea and vomiting (CINV) prevention for Thai patients receiving high-dose (HD) cisplatin. Four-drug regimen with additional NK-1 receptor antagonist (NK1RA) is considered more effective and recommended by international practice guideline.

Objective: To evaluate cost effectiveness of additional NK1RA for CINV prevention in Thai patients receiving HD cisplatin in 3-cycle horizon, societal perspective.

Methods: During January to December 2019, 30 patients receiving HD cisplatin were prospectively enrolled to receive standard three-drug regimen at King Chulalongkorn Memorial Hospital. Total medical resource utility, non-medical cost and clinical outcomes were actually collected and used for establishing decisional-tree model and cost-effectiveness analysis. Complete response (CR) rates in NK1RA-containing regimen were assumed by combination of CR rates in three-drug regimen and odd ratio from network meta-analysis. Three arms decisional-tree model was constructed. First, standard strategy, a real-world practice in Thailand, patients received three-drug regimen in all cycles of chemotherapy. Second, NK1RA-rescue strategy, patients received three-drug regimen in the first cycle and additional NK1RA in subsequent cycles if the patients experienced CINV. Third, NK1RA-upfront strategy, patients received four-drug regimen in all cycles. The study endpoint is to compare cost and QALYs in term of incremental cost-effectiveness ratio (ICER).

Results: CR rates were 80% and 68% in first and second cycle in patients receiving standard three-drug regimen. The NK1RA-upfront strategy produced greatest QALYs of 0.0325, followed by 0.0316 and 0.0269 in NK1RA-rescue strategy and standard strategy respectively. Mean total costs were 11,309, 4,411 and 3,685 Thai baht (THB) respectively. The ICER of NK1RA-rescue strategy and NK1RA-upfront strategy relative to standard strategy were 154,434 and 1,361,339 THB per QALY respectively. Therefore, the ICER of NK1RA-rescue strategy but not NK1RA-upfront strategy is considered to be cost effective at the willingness-to-pay (WTP) level of 160,000 THB per QALY.

Conclusions: Our findings suggested that the additional NK1RA as a rescue strategy is cost-effective in patients receiving HD cisplatin in Thai health care.