Cost-effectiveness analysis and cost-utility analysis of anti-TNF-α drugs in psoriatic arthritis

Background

- Most common treatments for psoriatic arthritis (PsA) are non-steroidal anti-inflammatory drugs (NSAIDs), COX-2 inhibitors, corticosteroids and disease-modifying antirheumatic drugs (DMARDs). Recently, anti-TNF-α drugs have been introduced as first line treatments of PsA.
- Cost-effectiveness (CEA) and cost-utility (CUA) analysis of anti-TNF-α, infliximab and adalimumab according to the perspective of the Italian National Health Service (INHS).

Methods

- A Markov model (Figure 1) has been structured in 5 states describing the clinical condition according to the American College of Rheumatology (ACR) criteria: baseline (ACR ≤ 20, state A), ACR ≥ 20 (state B), ACR ≥ 50 (state C), ACR ≥ 70 (state D) and failure of treatment (state E).
- The transition parameters are estimated based on three different Phase III pivotal studies of adalimumab, infliximab and etanercept versus placebo. All trials presented efficacy results in terms of time trends of responders percentages of ACR 20, ACR 50 and ACR 70 levels. In order to reflect for different placebo responder percentages and make studies more comparable, efficacy results were corrected according to the method proposed by Cheu and colleagues.
- Markov model has been implemented with TreeAge Pro 2006 (TreeAge Software, Inc., Williamstown, MA, USA).
- Two-dimensional Monte Carlo simulation (2,000 trials + 200 samplings) has been performed with construction of the acceptability curves.
- In deterministic simulations, state-specific efficacy corresponded to the class mid-point (e.g. 35% in state B), while in probabilistic simulations a uniform distribution in class range was assumed for individual efficacy values.

Conclusions

- The use of anti-TNF-α drugs in the treatment of psoriatic arthritis induces significant improvements in clinical conditions, quality of life and activity of the disease.
- The anti-TNF-α drugs produce different levels of effectiveness and costs, but no strategy is clearly dominated by any other.
- The principal limit of this economical analysis is that only biological drugs costs are included. Psoriatic arthritis also induces intrinsic costs, complications management costs or disability related savings. First would differ among drugs with different efficacy and/or tolerability profiles. However, the compared drugs result substantially equivalent in this respect, and thus results of the present analysis can be considered valid.

References