A Budget Impact Model for the Economic Assessment of Tocilizumab in the Treatment of Rheumatoid Arthritis Patients in Italy

Introduction

- Rheumatoid Arthritis (RA) management imposes a severe economic burden in terms of both direct medical costs and societal costs linked to productivity losses and quality of life impairment [1].
- Both direct and indirect costs increase with disease progression. This aspect underlines the importance of the early adoption of therapeutic strategies that can modify the progression.
- Pharmaceutical treatment of RA includes non-steroidal anti-inflammatory drugs, corticosteroids, non-biologic disease modifying anti-rheumatic drugs (DMARDs), like methotrexate, and biological DMARDs, like the anti-TNFα drugs and the more recently introduced biologics rituximab, abatacept and tocilizumab.
- A Budget Impact (BI) model was developed to assess the impact on Italian National Health Service expenditure caused by the use of tocilizumab (a monoclonal antibody approved by EMA in early 2009) as a first-line biologic treatment vs. traditional anti-TNFα therapies in the treatment of moderate to severe RA patients.

Methods

- A Markov model was used to simulate the progression of a cohort of RA patients through three lines of biologic treatments with anti-TNFα and tocilizumab, palliative therapy and death. The time horizon of the BI analysis was five years.
- First-line tocilizumab followed by a second- and a third-line anti-TNFα treatment was compared with a more traditional strategy based on anti-TNFα cycling.
- The target population was defined by the number of incident RA patients eligible for first-line biologic treatment based on Italian epidemiological [2,3] and market data [4].

Methods (continued)

- Survival on therapy data were used to define the timing of the switch to the next treatment in the simulated sequences. Anti-TNFα data derived from an observational study of 711 patients in 23 Italian centers [5]. No observed survival therapy for tocilizumab exists in literature yet, so the average value of anti-TNFα was used (Table I).
- Mortality was calculated based on mortality tables for the general Italian population by age and sex [6], factored by a specific relative risk for the pathology [7].
- Direct medical costs were considered: drug acquisition, administration and monitoring tests, according to current prices and tariffs [8-12] (Table II).
- A supplementary analysis was performed to estimate the relative effectiveness of use of economic resources. Objective of this supplementary analysis was the assessment of the average number of patients kept in active treatment (i.e. not palliative therapy) with an hypothetical fixed annual budget (€1,000,000).

Results

- The number of Italian RA patients eligible to a first-line biologic therapy was estimated to be 705 per year.
- First-line tocilizumab strategy induced a cost decrease ranging from €8,005,000 at year 1 (-8.6% with respect to anti-TNFα cycling) to €1,348,000 at year 5 (-3.1%).

Conclusions

- Using tocilizumab as first line biologic treatment in Italian RA patients represents a valuable option as it is expected to reduce National Health Service expenditure and lead to a more efficient use of healthcare resources.

Acknowledgements

- This study was supported by ROCHE, Monza, Italy.

References