

The cost-effectiveness of EGFR inhibitors in colorectal cancer treatment

Summary

Objective: To analyze the benefits, costs and cost-effectiveness of current clinical practice to scenario with increased proportion of biological agents in the first-line treatment of the metastatic colorectal cancer (CRC) patients in Estonia.

Methods: Literature reviews for evidence on effectiveness and cost-effectiveness of the medicines were carried out in the PubMed database in July to August 2014. Studies were selected using pre-defined selection criteria. For effectiveness, 55 articles met the inclusion criteria and were included in the report. For cost-effectiveness, 8 articles met the criteria and were discussed in the report. Model for the simplified cost-effectiveness analysis compared the overall benefits (OS and PFS) and drug costs for the first-line treatment of 260 metastatic CRC patients in current practice with scenario of twofold increase in the use of biological agents. A budget impact analysis was conducted to assess the additional costs from the Estonian Health Insurance Funds' perspective.

Results: According to the literature review, the additional health effect of adding EGFR inhibitor to the chemotherapy is proven for patients in ESMO treatment groups 1 and 2 (treatment line 1 or 2 or 3), and adding VEGF inhibitor to the chemotherapy is proven for patients in ESMO treatment groups 1–3 (treatment line 1 or 2). The cost-effectiveness results in the sources showed that ICER for cetuximab and chemotherapy was \$21,033–401,731 per LYG and \$30,971–153,448 for bevacizumab and chemotherapy.

In the cost-effectiveness analysis, as a result of increasing the proportion of biological agents in the first-line treatment, the metastatic colorectal cancer patient may get additional 1.3–2.1 PFS months and 2.3–7.4 OS months. In the base-case scenario, ICER was €79,144 per one additional PFS life-year, and €44,565 per one additional OS life-year. In the sensitivity analysis, ICER ranged from €48,804–94,762 per one PFS life-year and €14,045–53,359 per one OS life-year, most influenced by effectiveness input. Overall, ICER was lowest to ESMO treatment group 1, ranging from €13,086–35,689 per one PFS life-year and €3,101–15,862 per one OS life-year, and it was highest to ESMO treatment group 2, ranging from €99,594–154,848 per one PFS life-year and €21,944–61,939 per one OS life-year.

As a result of increasing the proportion of biological agents in the treatment of metastatic colorectal cancer patients, the additional costs to Estonian Health Insurance Fund would be €2.1–3 million per annum. In the first line treatment, the additional costs per annum would be €2.1–2.7 million.

Conclusions: Biological agents together with chemotherapy are more effective than chemotherapy alone in treatment of ESMO treatment groups of 1–3 patients, but also create additional costs.

Citation: Nahkur O, Padrik P, Elme A, Võrno T, Reile R, Kiiwet R-A. *EGFR-inhibiitorite kulutõhusus kolorektaalvähi ravis*. Tartu: Tartu Ülikooli tervishoiu instituut; 2015.