

ECONOMIC IMPACT OF THE USE OF FIXED-DOSE VS PERSONALIZED DOSE OF PEMBROLIZUMAB

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BACKGROUND

Pembrolizumab (P) is a highly selective anti-PD-1, approved for the treatment of metastatic melanoma, lung cancer and other advanced malignancies. The original trials determined that the dose calculation is done based on the patient's weight, personalized dose (PD) 2 mg/kg 3w. In 2018, EMA approved Fixed-Dose (FD) 200mg, 3w. Studies suggest that PD and FD are associated with similar levels of efficacy and adverse effects. [1] We suspected that using newly-approved dose of 200 mg for all patients may be unnecessarily high dose. Recent publications indicate a financial increase with the use of FD. [2]

PURPOSE

The objective of this study is demonstrate the potential economic impact of the use of FD (200 mg) vs PD (2 mg/kg) in our population and analyze the potential impact of the introduction of Dose Banding (DB) strategy in our Hospital.

MATERIAL AND METHODS

Between march and december of 2018, we analyzed patients treated with Pembrolizumab (already in treatment and new patients). We collected the data (date, weight, diagnosis and cycles performed) in the software. We calculated the number of milligrams (mg) used in PD, DB and FD and compared the economic impact of the 3 strategies. We used the National Dose Banding Table of NHS England. We prepare pembrolizumab (50 mg vials) in a GMP compliant unit. Full use of vials is achieved with an average of 3 patients day.

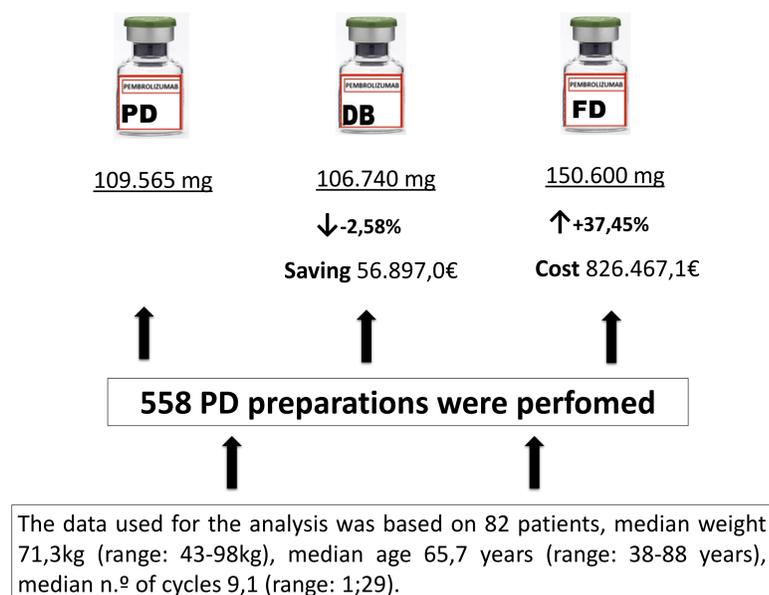
RESULTS

Data from pembrolizumab treatment in lung and melanoma patients



- Melanoma**
 - n=42 patients
 - Median Age: 66,9 years (range: 38-88 years)
 - Mediam Weigh: 73,5 Kg (range: 50-97Kg)
 - Male: 57,1%
 - In average FD ↑ 44,3% the dose of PD (range: 2-100%)
- Lung**
 - n=40 patients
 - Median Age: 64,4 years (range:43-85 years)
 - Mediam Weigh: 70,7 Kg (range: 43-98 Kg)
 - Male: 80%
 - In average FD ↑ 47,8% the dose of PD (range: 2-133%)

Economic impact of Fixed-Dose and Dose Banding in Pembrolizumab treatment



In average FD ↑ +46% the dose of PD (range: 2%-133%)

CONCLUSION

Using data from our Hospital, we found evidence that the FD regime results in an increase in dose and consequently in costs, in relation to PD. The fixed dose of 200mg appears to be excessive, for majority of individuals. We also verified that the introduction of the DB approach can be potentially beneficial in reducing the cost, with the same efficacy and advent events profile. Dose Banding can offer a safe, effective and economical alternative to PD which could help to alleviate pressures on drugs budgets. With current GMP standards and error minimization strategies in place, it's not foreseen that fixed dose may improve safety in our hospital setting.

Note: Prices are not mentioned due to the confidentiality agreement.

BIBLIOGRAFIA

- [1] Ogungbenro, K; Dose rationalisation of pembrolizumab and nivolumab using pharmacokinetic modelling and simulation and cost analysis, doi: 10.1002/cpt.875
 [2] Goldstei, D; Weight-Based Dosing vs Fixed Dosing of Pembrolizumab: an Economic Analysis – Adv. in Hematology & Oncology. Aug 2018–Vol.16 [2]

