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Background and importance

Immunotherapy fixed-dose (FD) inclusion in daily clinical practice has led to a significant economic impact. Some studies show the equivalence of nivolumab¹ and pembrolizumab² at individualized-dose (ID: nivolumab 3mg/kg/2w; pembrolizumab 2mg/kg/3w) and FD (nivolumab 240mg/2w, 480mg/4w; pembrolizumab 200mg/3w).

Aim and objectives

Evaluating the impact of applying dose-banding (DB) in immunotherapy with nivolumab and pembrolizumab in terms of efficiency, chemotherapy schedule and pharmacological exposure.

Material and methods

- Observational retrospective study conducted at a tertiary hospital, including patients treated with nivolumab and pembrolizumab from January/2019 to September/2021.
- Anthropometrical measures and number of administered cycles were specified.

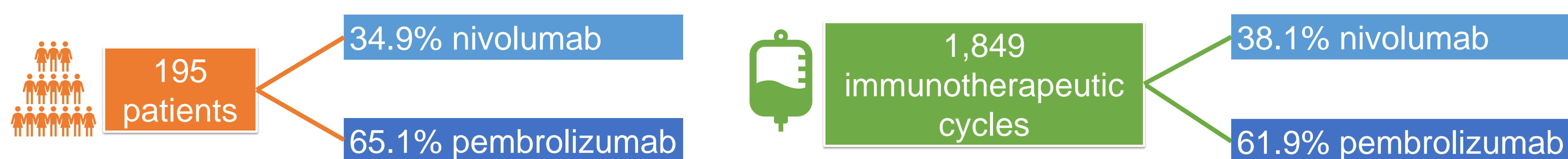
Dosage adjustment intervals:

NIVOLUMAB	PEMBROLIZUMAB
< 60kg: 170mg	< 70kg: 130mg
60-70kg: 200mg	70-90kg: 160mg
70-80kg: 230mg	> 90kg: 200mg
> 80kg: 240mg	

Clinical application of DB:

- ✓ Efficiency: annual economic saving, calculated as the difference in cost between FD and DB.
- ✓ Chemotherapy schedule: changes in the frequency of treatment administration, calculated as median difference in number of cycles administered per year.
- ✓ Pharmacological exposure: dosage discrepancy between DB-FD, calculated as median dose deviation.

Results



DB-FD	NIVOLUMAB		PEMBROLIZUMAB	
Efficiency	DB: 529,556 €	FD: 573,235 €	FD: 1,103,387 €	DB: 820,262 €
	- 43,679 € / year		- 283,125 € / year	
Chemotherapy schedule	+ 58 cycles / year		no difference	
Pharmacological exposure	-4.2% (-16.7 to 0.0)		-20.0% (-35.0 to -20.0)	

Conclusion and relevance

The implantation of a dose-banding program with nivolumab and pembrolizumab would lead to potential economic savings and a dosing reduction in comparison with fixed-dose regimen. This is especially attracting in pembrolizumab, which achieve higher annual savings without detriment of the chemotherapy schedule.

References

1. DOI:10.1093/annonc/mdx235 // 2. DOI:10.1186/s40425-017-0242-5