

Comparing two pharmacological stress tests:

Adenosine vs Adenosine Triphosphate infusion – patient’s tolerance and image quality

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1 – INTRODUCTION AND AIM

Adenosine and Adenosine Triphosphate (ATP) are vasodilator agents that are used for pharmacologic stress testing in Myocardial Perfusion Imaging (MPI).

Both pharmaceuticals may cause side-effects that are similarly described in the literature. Although, the half-life of these molecules is slightly different and patient’s tolerance might be different.

These molecules have also been associated with an increase in the subdiaphragmatic tracer uptake, that may reduce image quality, interfering with image interpretation.

The aim of this study was to compare pharmacologic stress tests induced by adenosine infusion and by ATP infusion in terms of side effects referred by patients and the corresponding image quality.



Fig. 1 – Syringe pump

2 – MATERIALS & METHODS

PATIENT'S TOLERANCE

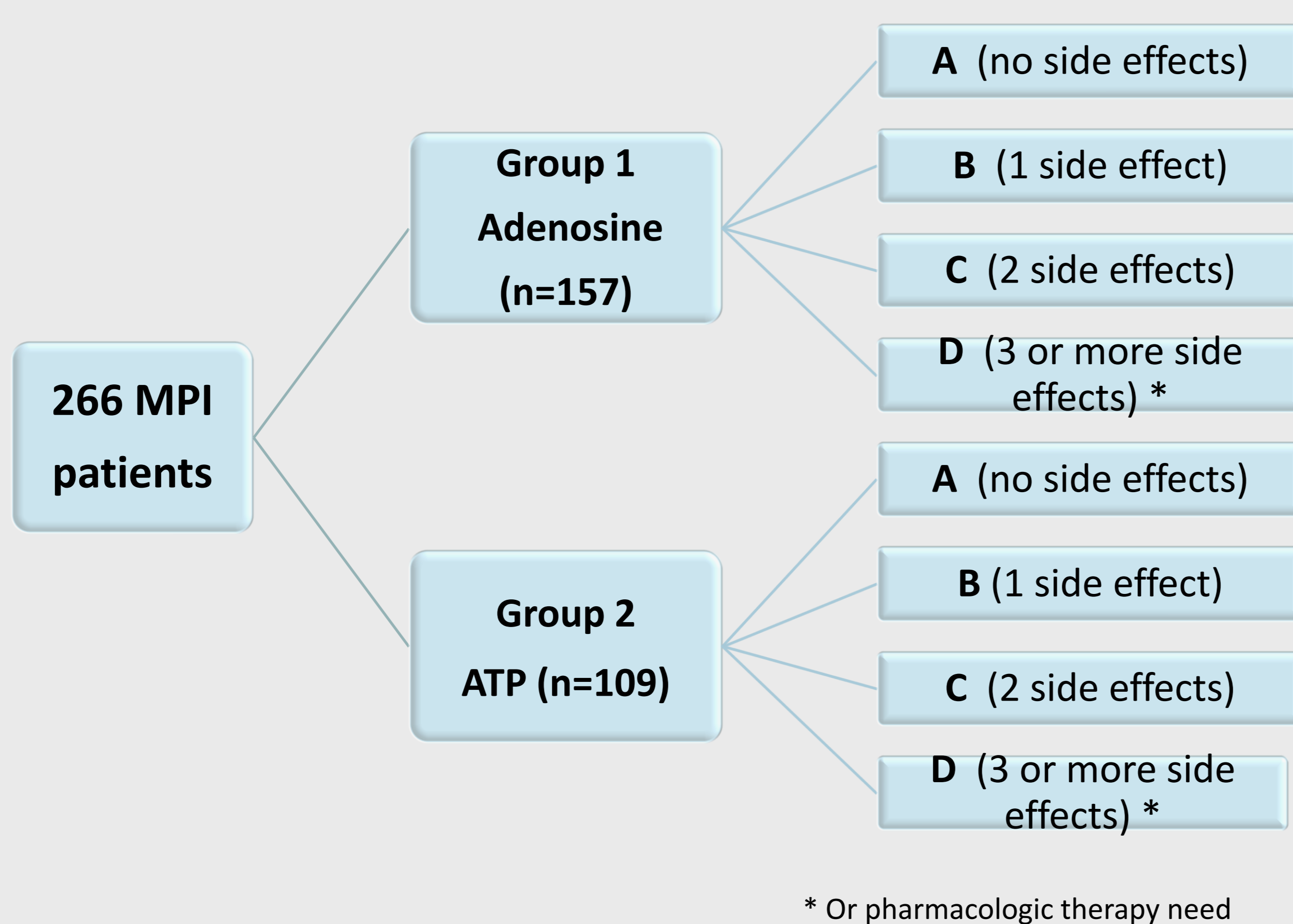


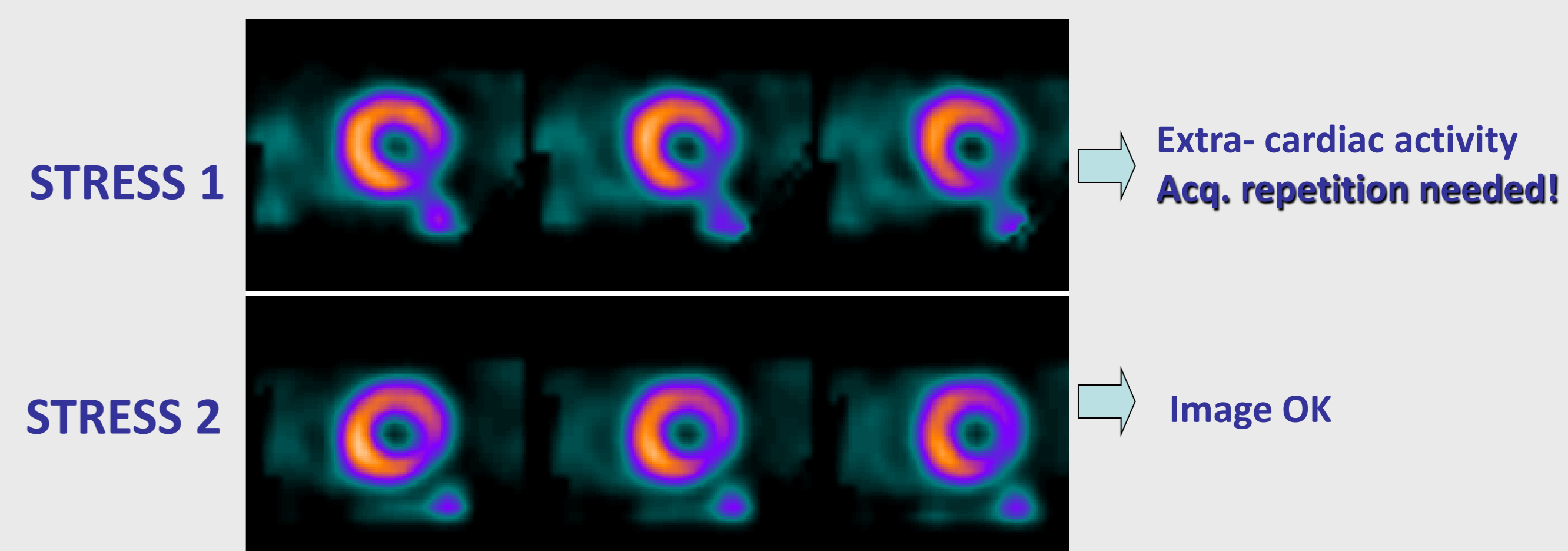
Fig. 2 – Patient sub-groups according to the occurrence of side effects

Fig. 3 – Form used to collect data

IMAGE QUALITY

Image quality was evaluated according to the requirement of a new stress acquisition due to extra-cardiac activity that interfered with image quality and interpretation.

Microsoft Excel™ and SPSS™ were used in this analysis. We also correlated the two populations (Adenosine and ATP) according the risk factors for cardiac events and the Myocardial Perfusion Imaging report result (normal or pathologic), in order to ensure the uniformity between both groups.



3 - RESULTS

The most common effects were facial flushing, abdominal/ throat pressure and discomfort in the arms.

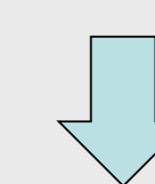
Table 1 - Side effects and Image Quality results

		Group 1 (Adenosine)	Group 2 (ATP)	p-value ($\alpha=0,05$) mean comparison for paired samples test
Side effects	A (no side effects)	27%	35%	0,007
	B (1 side effect)	34%	38%	0,065
	C (2 side effects)	20%	15%	0,033
	D (≥ 3 side effects)	19%	12%	< 0,001
Image Quality: Stress acquisition repeated		19,9%	9,9%	0,001

4 - CONCLUSIONS

- ✓ Highest percentage of no side effects → Group 2 (ATP infusion).
- ✓ Smaller percentage of three or more side effects → Group 2 (ATP infusion).
- ✓ However, in spite of the higher percentage of one side effect for group 2 (group 2 = 38% vs group 1 = 34%), the difference between them is not statistically significant (p=0,065),

both groups had the same percentage of only one side effect.



- ✓ Less acquisition repetition → Group 2 (ATP infusion) (acquisitions repeated: group 1=19,9%; group 2=9,9%; p=0,001).

THE GROUP THAT HAD BETTER RESULTS IN TERMS OF PATIENT'S TOLERANCE AND IMAGE QUALITY WAS

GROUP 2 – ADENOSINE TRIPHOSPHATE INFUSION

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