



# THE VASOGRADE SCORE IS ASSOCIATED WITH FUNCTIONAL OUTCOMES AFTER ANEURYSMAL SUBARACHNOID HEMORRHAGE

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## INTRODUCTION

- The VASOGRADE is a simple grading scale which combines the modified Fisher scale (mFS) and the World Federation of Neurological Surgeons scale (WFNS).
- It allows stratification of the risk of delayed cerebral ischemia(DCI) at presentation after aneurysmal subarachnoid hemorrhage(aSAH).
- The relationship between the VASOGRADE scores and functional outcomes after aSAH is not well established.

## MATERIAL AND METHODS:

- We retrospectively evaluated consecutive patients admitted with aSAH to a high volume tertiary center in Brazil from November 2015 to January 2018
- All patients were classified according to the severity of the clinical presentation and amount of blood seen at the initial computerized tomography (CT) scan using the WFNS scores, the mFS and the VASOGRADE.
- At discharge, functional outcomes were evaluated using the modified Rankin scale (mRs).

## RESULTS:

- : A total of 96 patients (mean age 51.6+/-13.6, 73% females) were evaluated.
- The WFNS scores distribution was (1: 50%, 2: 27.1%, 3:2.1%, 4: 7.3% and 5 13.5%).
- Most patients had a mFS of 2 (27%) or 3 (39,3%)
- A total of 40.9% of the patients were classified as VASOGRADE green; 35.5% yellow and 21.6% red. (figure 1).
- Patients with worse VASOGRADE scores had a higher frequency of pneumonia (Green: 5.6%, Yellow: 21.2%, Red: 36.8% p=0.01)
- Those with worse VASOGRADE scores also had a higher frequency of infarction caused by DCI (Green: 2.8% Yellow 15.2%, Red: 31.6%, p=0.01). (see figure 2)

- A change from either green to yellow or yellow to red was associated with an odds ratio (OR) of 12.8 [95% CI 4.5-36.1] of poor functional outcome ( mRs > 2) (see figure 3).

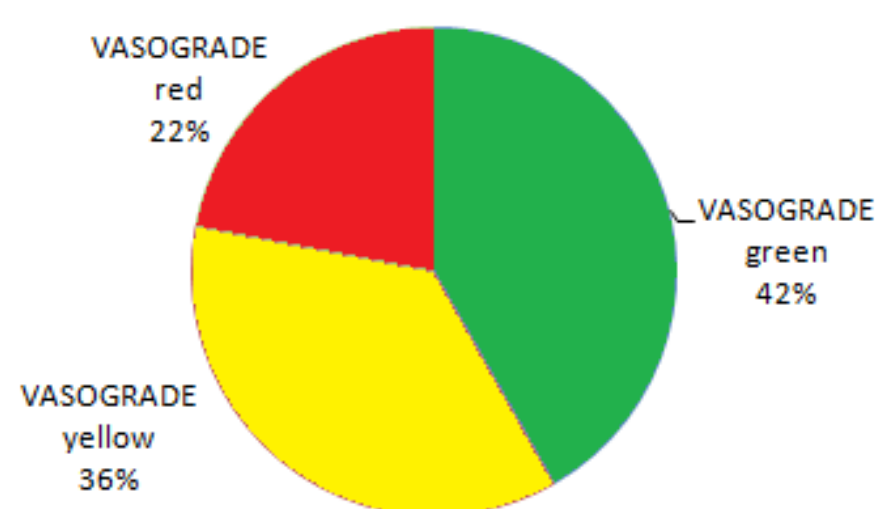


Figure 1. VASOGRADE population score distribution

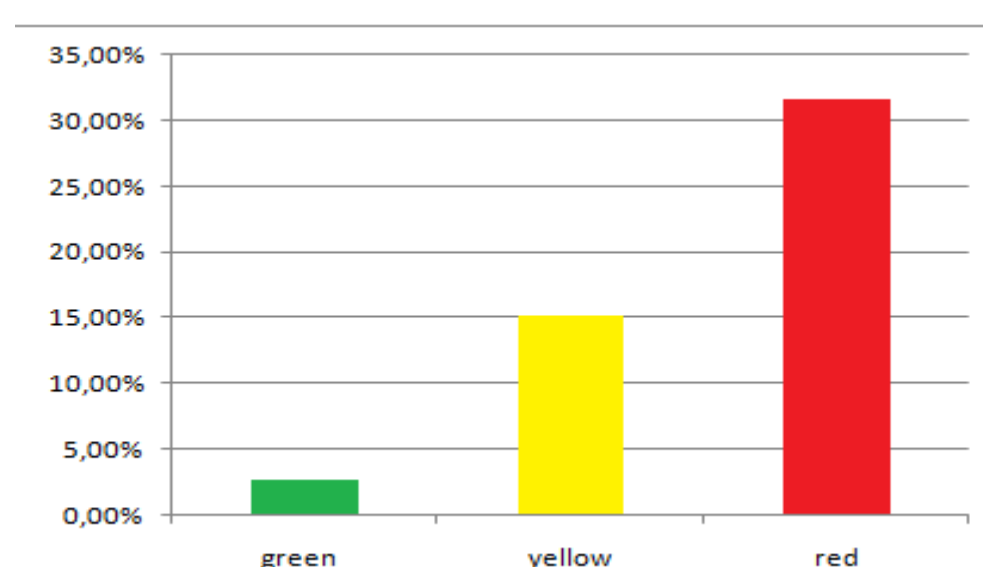


Figure 2. Frequency of brain CT infarction due to DCI correlated to VASOGRADE (p=0.01)

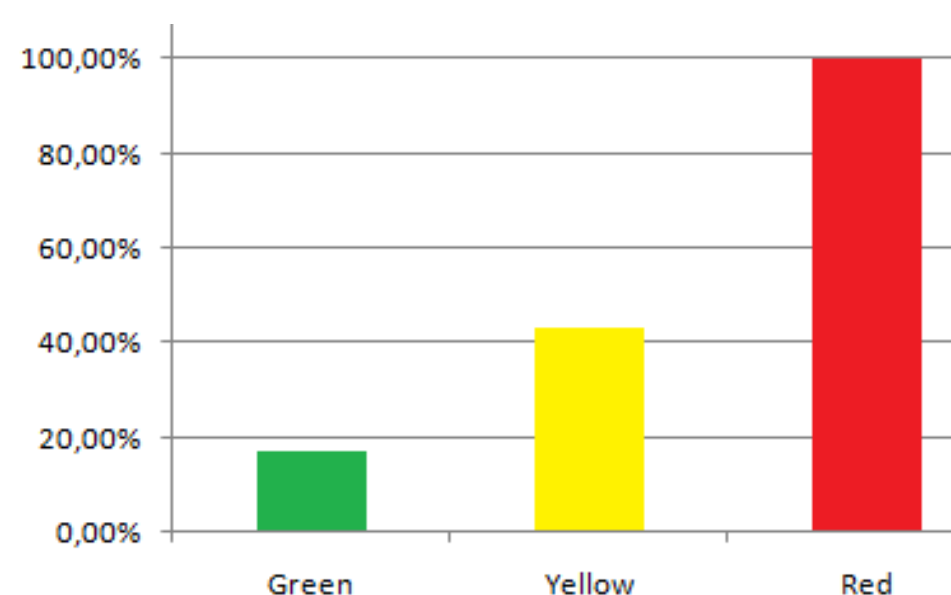


Figure 3. Frequency of mRs > 2 according to VASOGRADE (p=0.01)

## CONCLUSION:

- VASOGRADE is a simple score and can predict not only the risk of DCI but also functional outcomes at discharge after aSAH
- The performance of VASOGRADE to predict long term functional outcomes, as well as its association with other deficits like cognitive dysfunction deserves further investigation.