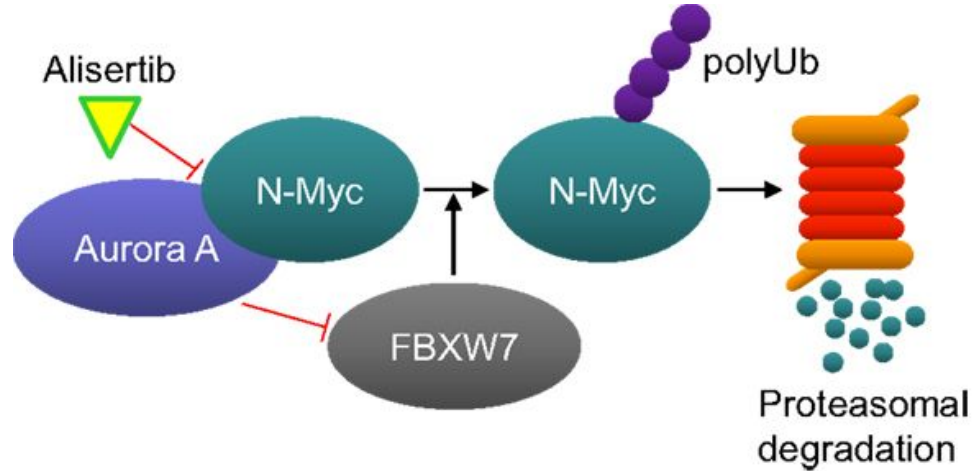


Neuroendocrine prostate cancer (NEPC) and treatment with alisertib

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Introduction

Alisertib is believed to benefit patients with **neuroendocrine prostate cancer (NEPC)**, an aggressive variant of prostate cancer that may develop as a mechanism of treatment resistance.



Questions and Methods

1

What is the observed 3-month progression free survival rate for men with metastatic prostate cancer treated with alisertib?

- Filter data and count the number of progressed cases

2

What variables are associated with 3-month progression status?

- (Continuous variables) Check the normality
 - Student's T-test & Wilcoxon rank sum test
- (Categorical variables) Check if the expected table has the value < 5
 - Chi-square test & Fisher's exact test

3

Is there an association between gene abnormalities and 3-month progression status?

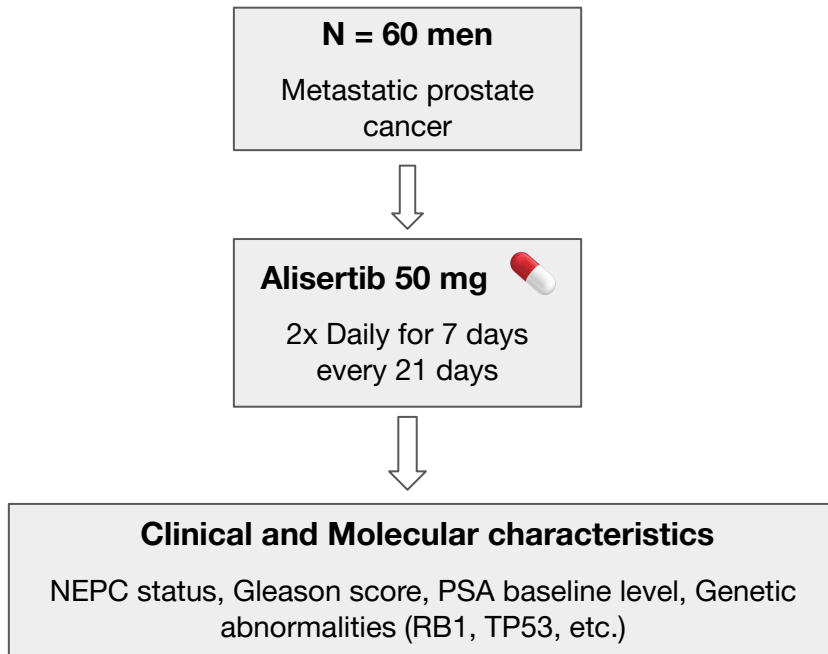
4

Are there different gene abnormalities and other variables associated with NEPC?

- Same with Q2

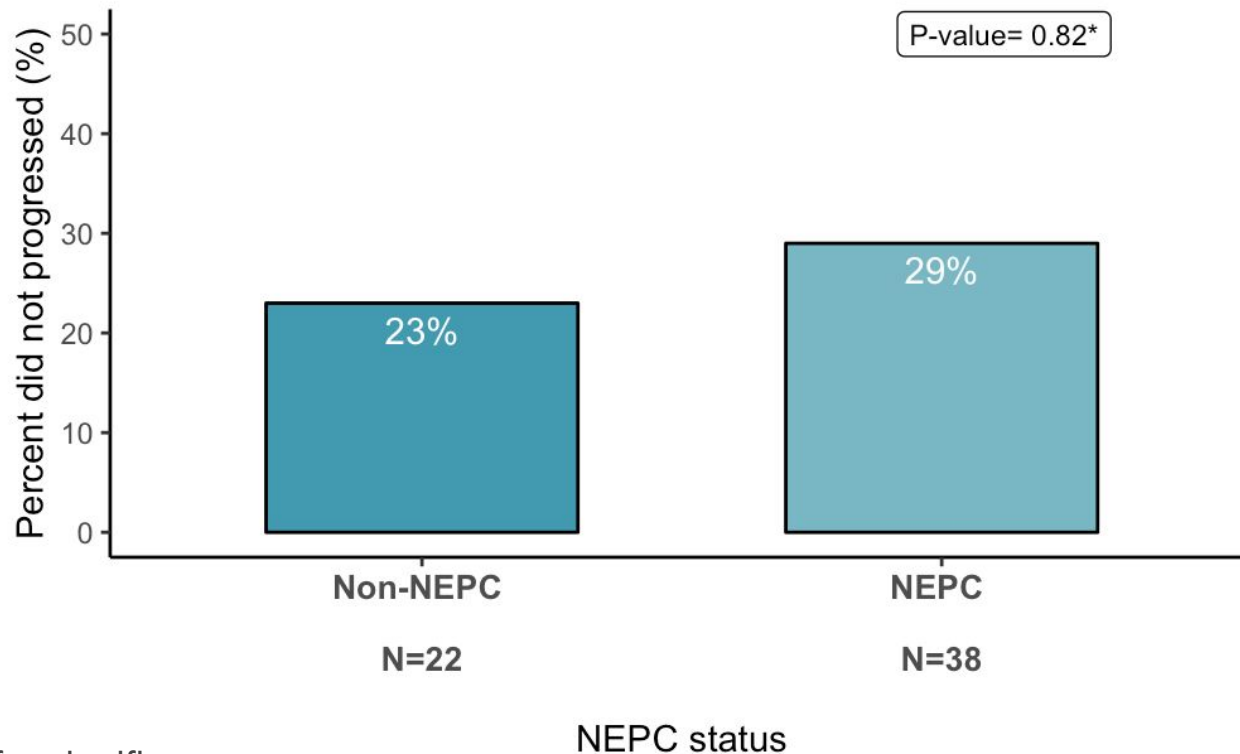
Methods

Our sample are severe patients; **Gleason score** shows the severity of the cancer that ranges from 1 to 10 and their median **Gleason score** is 8.



Results

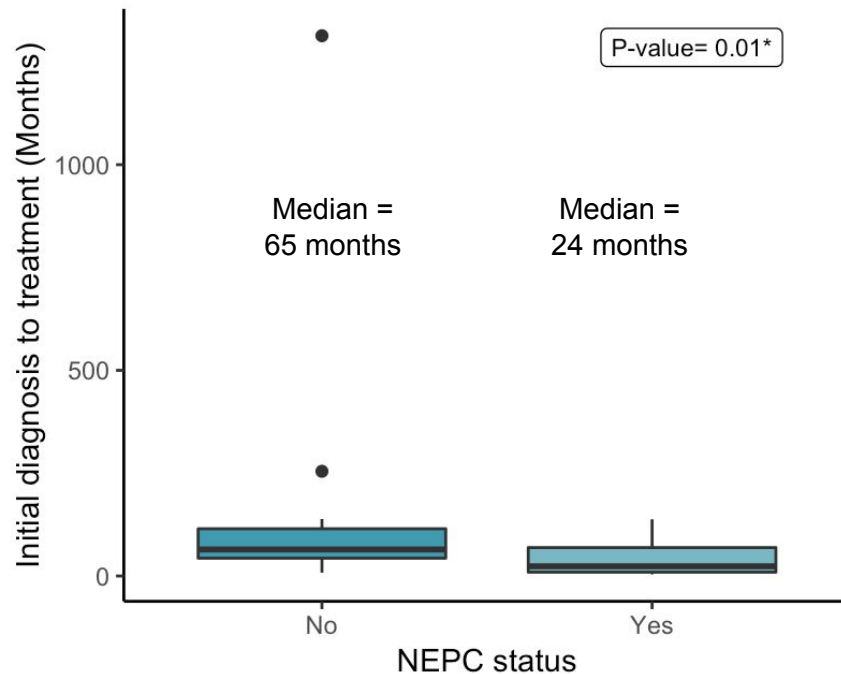
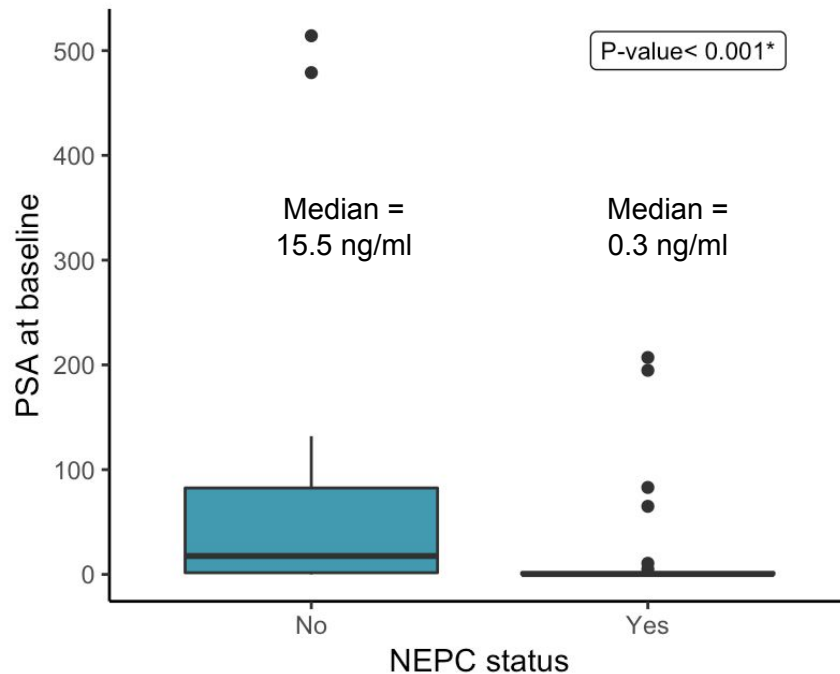
The observed **3-month progression status** for men with metastatic prostate cancer treated with alisertib is 27%.



*Chi-square test for significance

Results

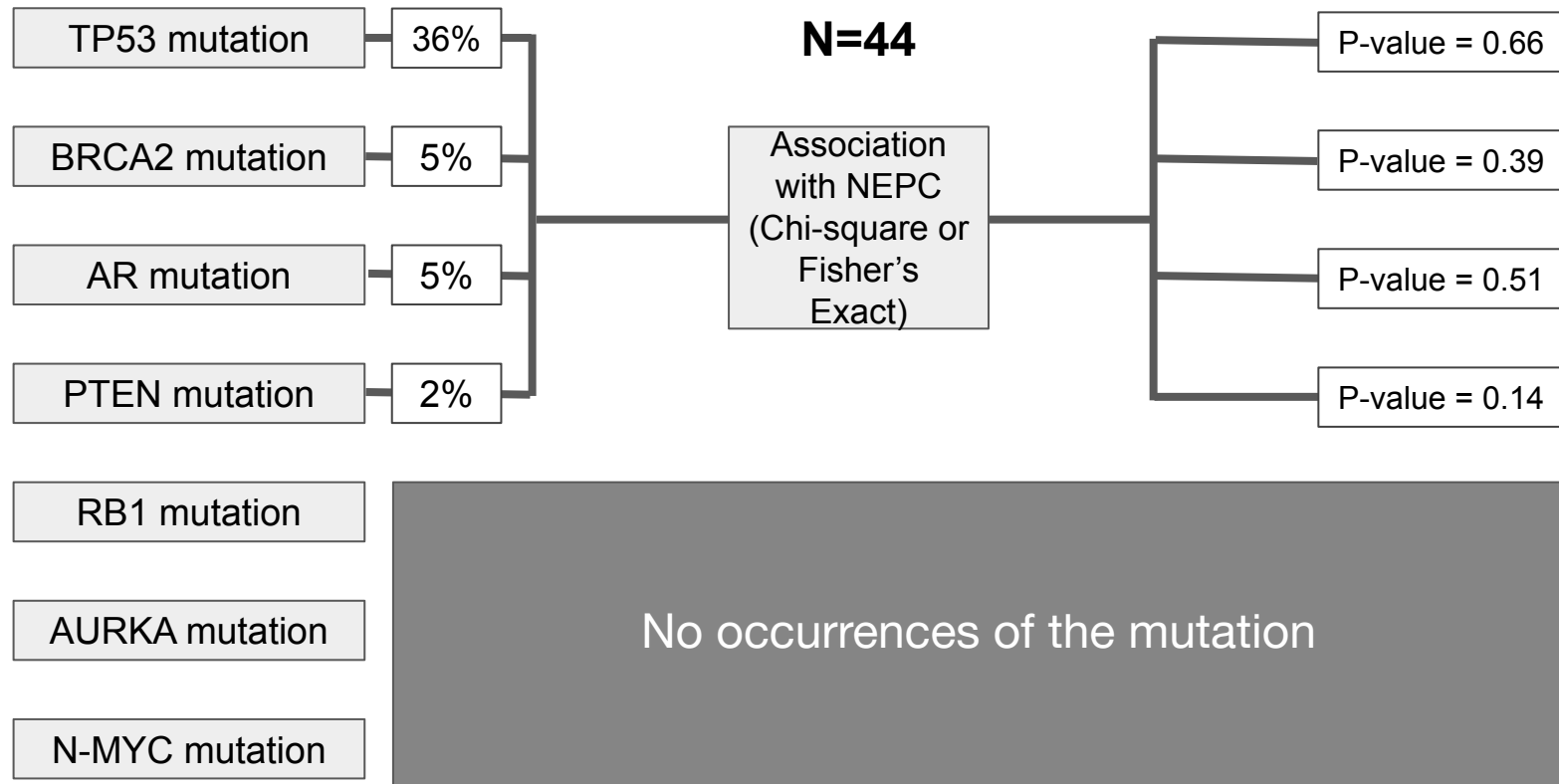
There is an evidence that **PSA level at baseline** and time from **initial diagnosis to treatment with alisertib** are associated with **NEPC status**.



* Wilcoxon rank sum test for significance

Results

No evidence showing that there is a gene abnormality variable associated with **NEPC status**.



Conclusion

- The sample has advanced cancer. (Median Gleason score = 8)
- Patients with **NEPC** have a significantly lower **baseline PSA level** and shorter **initial diagnosis to treatment time gap**.
- No evidence is found to show that there is a gene abnormality variable associated with **NEPC status**.
- Limitations due to small sample size and missing values (more than 1/4).
 - May not have enough power to detect a significant difference.
 - Cannot check the lab result that alisertib inhibits the interaction between **N-MYC** and **AURKA**.
 -
- Can consider longer follow-up time (e.g. 6-month progression status)

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