

# EFFECTS OF CARBOGEN-NICOTINAMIDE INHALATION AND R-CHOP CHEMOTHERAPY ON P53 LEVELS

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## Introduction

Inhalation of carbogen (95% oxygen / 5% carbon dioxide) and nicotinamide is suggested can to improve intratumor oxygenation and improve post-therapy outcomes (radiotherapy and chemotherapy). This is evidenced in cancer patients who obtained improvements in gradient recalled echo (GRE) MRI results, sensitivity to changes in blood oxygenation and spin-echo (SE) MRI, and sensitivity to perfusion or blood flow is shown with a large increase in signal intensity. The tissue in the tumour has a hypoxia condition and the condition is associated with apoptosis, which is indicated by decreased p53 levels. DLBCL is the most common malignant of the lymph nodes where the therapy used is CHOP or R-CHOP. However, 30% of cases do not respond to chemotherapy. This study aims to determine the effect of nicotinamide carbogen administration in DLBCL patients given RCHOP chemotherapy in a 1-time cycle against the apoptosis process.

## Method:

Experimental, descriptive, and analytical research was conducted at dr Kariadi Hospital Indonesia. With a sample of 20 DLBCL patients. Ten patients with a diagnosis of DLBCL were measured p53 levels, then were given carbogen-nicotinamide inhalation and chemotherapy with the RCHOP regimen. Then were measured p53 levels after administration of carbogen-nicotinamide inhalation and RCHOP. A control of 10 people with DLBCL were measured p53 levels before chemotherapy (RCHOP) were carried out without carbogen-nicotinamide inhalation and were repeated p53 level measurements.

## Result:

The average age of the treatment group was 55.5 (24-61) while the control age was 58.5 (21-65) ( $p=0.307$ ). The sexes in the treatment group were men 7 (70%) and women 3(30%), in the male control group 7(70%) and women 3(30%). The p53 level before the administration of carbogen-nicotinamide in the treatment group was 71.5 (14-601) after administering carbogen-nicotinamide to 145.8 ( $\pm 131.37$ ). There was an increase in p53 of 6.8 ( $\pm 118.23$ ). In the control group, the p53 levels before the administration of carbogen-nicotinamide were 236.5 (23-415), after the administration of carbogen-nicotinamide 157.6 ( $\pm 124.27$ ), there was a decrease of -65.3 ( $\pm 138.7$ ). Thus in the treatment group, there was an increase in p53 compared to the control group which decreased, although the changes between the two groups were not statistically meaningful ( $p = 0.839$ )

p53 serum level (pg/ml)	Treatment Group (n=10)	Control (n=10)	p
Pre carbogen-nicotinamide, median (min max)	71,5 (14-601)	236,5 (23-416)	0,212
Post carbogen-nicotinamide, mean $\pm$ SD	145,8 $\pm$ 131,37	157,6 $\pm$ 124,27	0,839
p $\pm$	0,646	0,114	
Delta p53, mean $\pm$ SD	6,80 $\pm$ 118,23	-65,3 $\pm$ 138,87	0,324

## Conclusion:

Carbogen-nicotinamide inhalation and R-CHOP were able to improve apoptosis, although changes between the two groups were meaningless.