

Association between Metabolic Acidosis and Malnutrition in Peritoneal Dialysis Patients. A Single Centre's Experience.

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Introduction

Metabolic acidosis (MA) has been recognized as an important stimulus for net protein catabolism.

Peritoneal dialysis (PD) is regarded to have advantage in normalizing the acid-base homeostasis over hemodialysis due to continuous supply of buffer.

However, many PD patients still remain acidotic and the clinical impact of this MA is uncertain in our Malaysian patient population.

Objectives

To look into the prevalence of metabolic acidosis and the association of metabolic acidosis with nutritional parameters

Designs and Methods

There was a cross sectional study recruiting 197 CAPD and APD patients in Hospital Kuala Lumpur, from October to December 2011.

The acid-base status of study subjects was assessed by a single venous blood gas sample taken during a scheduled clinic visit.

Nutritional parameters consisted of albumin, phosphate, creatinine, total cholesterol measured 2 weeks prior to the visit, and Protein equivalent of Total Nitrogen Appearance (nPNA) from the most recent kt/v assessment.

Patient with recent peritonitis within 3 months were excluded from this study.

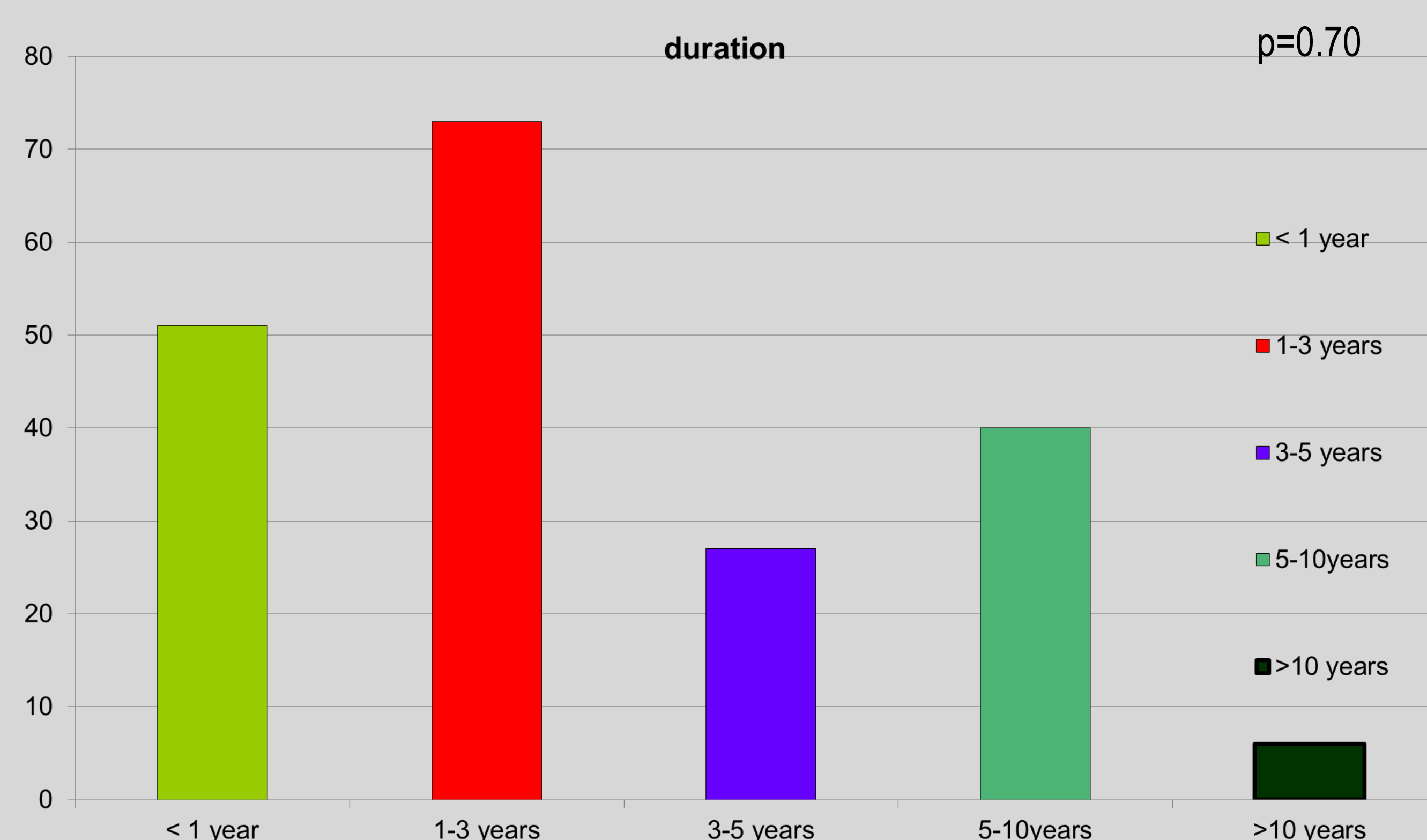
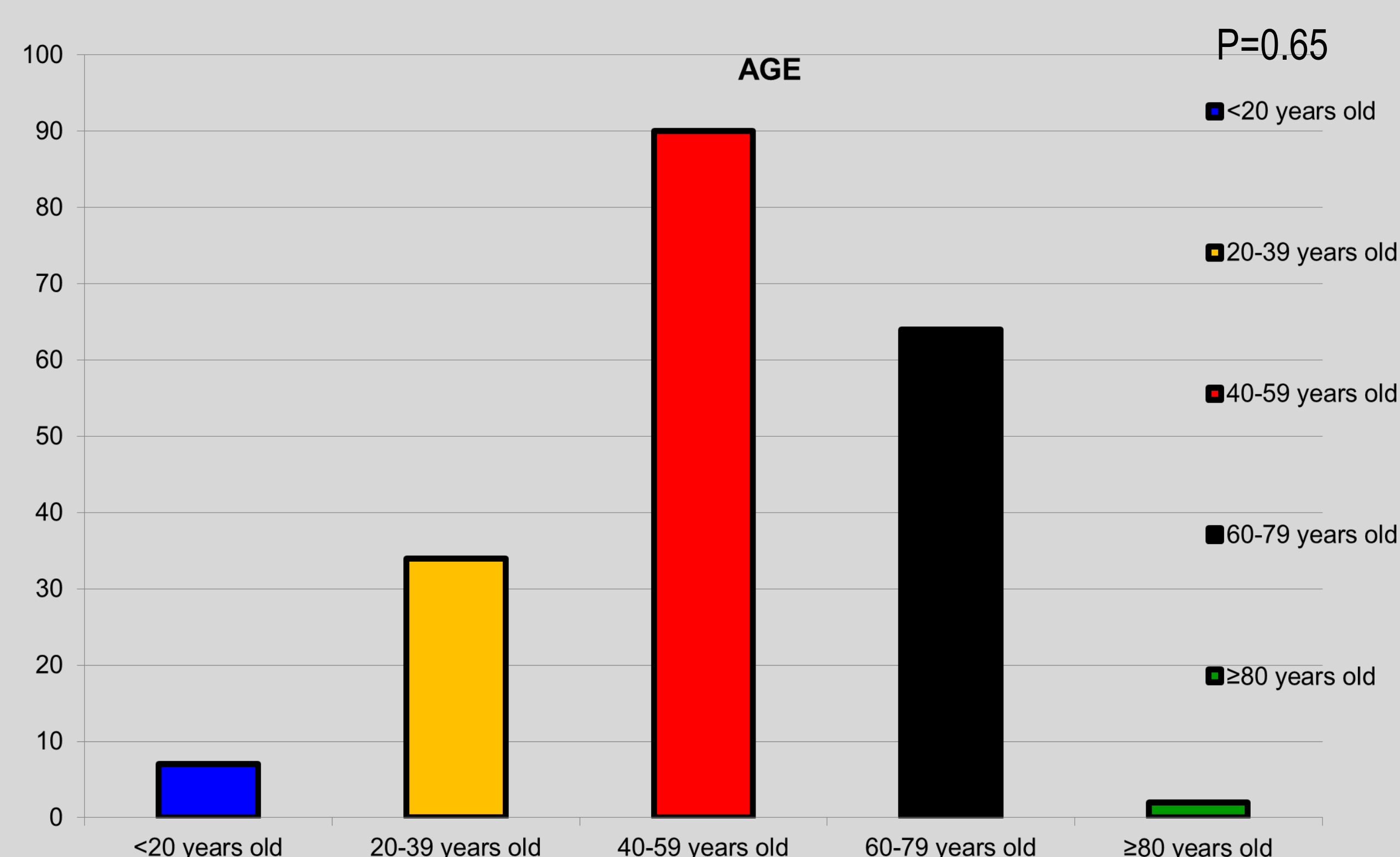
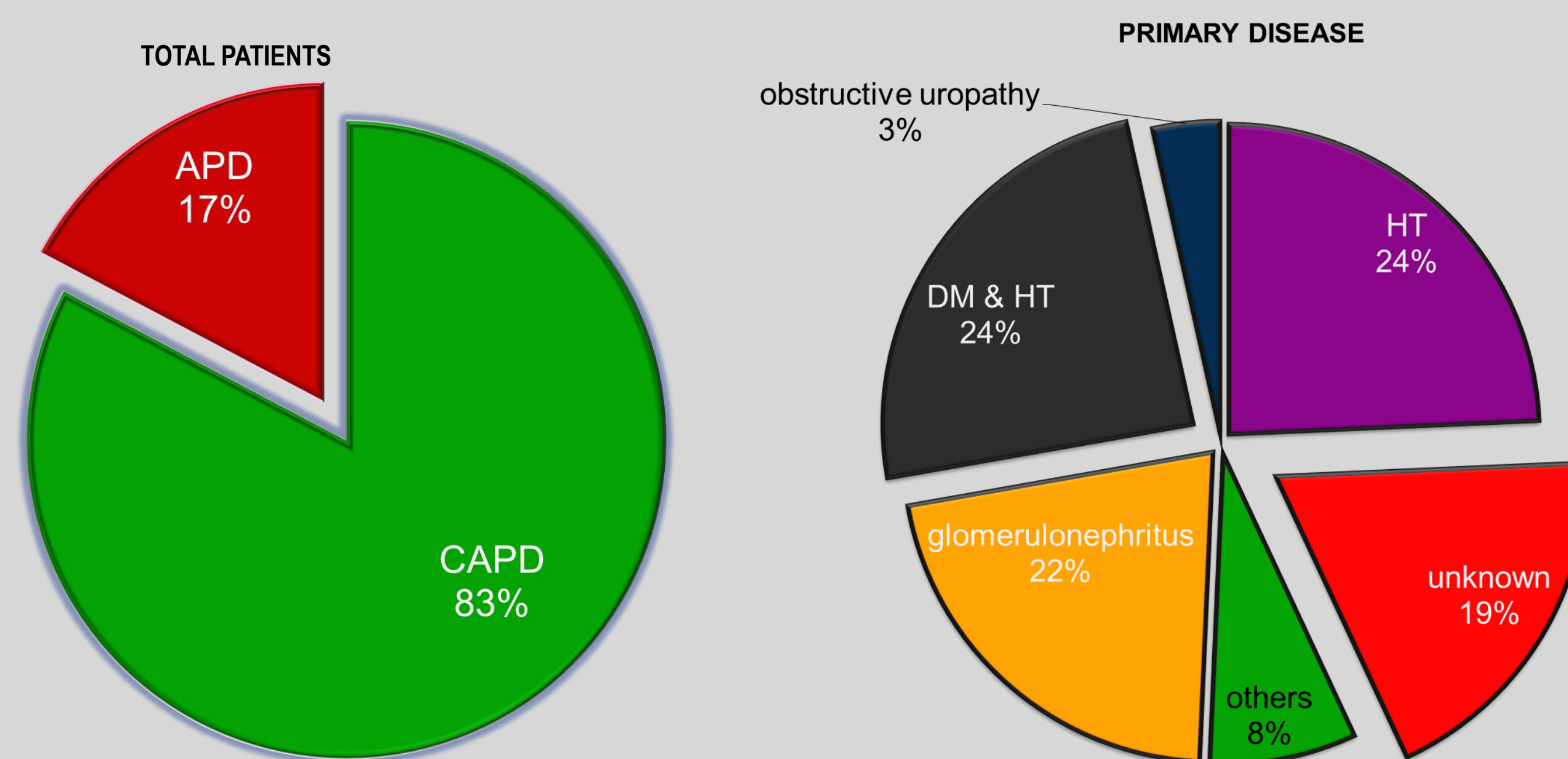
Results

A total of 36 patients (18.3%) had metabolic acidosis (serum bicarbonate of ≤ 22 mmol).

11 patients of that, (30.6%) had severe metabolic acidosis (serum bicarbonate of ≤ 19 mmol/l)

The mean HCO_3 level in our population was 24.2 ± 3.3 mmol/l

Results and Discussion



| | METABOLIC ACIDOSIS ($\text{HCO}_3 \leq 22.0\text{MMOL/L}$) | | NON METABOLIC ACIDOSIS | | P VALUE |
|----------------------------|--|---------|------------------------|---------|---------|
| Gender (chi-square) | n | | n | | |
| Male | 19 | (19.0%) | 81 | (81.0%) | 0.072 |
| Female | 17 | (17.5%) | 80 | (82.5%) | |
| | MEDIAN | (IQR) | MEDIAN | (IQR) | |
| Creatinine Clearance | 66.8 | (34.47) | 61.5 | (32.58) | 0.863 |
| KT/v | 2.2 | (0.90) | 2.3 | (0.59) | 0.331 |
| | 0.8 | (0.29) | 0.9 | (0.27) | 0.40 |
| i. Serum albumin | 31 | (6.0) | 32.0 | (5.0) | 0.711 |
| ii. Serum phosphate | 1.7 | (0.72) | 1.5 | (0.68) | 0.056 |
| iii. Serum FSL | 4.9 | (1.75) | 4.6 | (1.04) | 0.46 |
| iv. nPNA | 0.8 | (0.29) | 0.9 | (0.27) | 0.40 |
| | | | | | |
| Drop out rate (chi-square) | n | | | | |
| i. Converted to HD | 7 | (22.6%) | 24 | (77.4%) | 0.757 |
| ii. Died | 5 | (19.2%) | 21 | (80.8%) | |

Results and Discussion

The mean age was 53.4 ± 14.8 (95% CI 51.3 - 55.4) years old

There was no association between metabolic acidosis with age, duration of PD, comorbidities and nutritional parameters.

There was also no positive association between metabolic acidosis and drop out of patients to hemodialysis or patient death

Literature review

- 10% to 12% of patients treated with CAPD and APD alone had a serum HCO_3 of equal or less than 22mEq/L ¹
- Metabolic acidosis is associated with malnutrition²
- By correcting the metabolic acidosis in CAPD patients, it will improve the nutritional status and will improve the long term outcome²

Conclusion

Our study population had higher incidence of metabolic acidosis compared with previous studies.

Contrary to previous published data, our study did not find any correlation between metabolic acidosis and malnutrition.

References

1. Acid-base profile in patients on PD 2003
2. Nutrition in peritoneal Dialysis on NDT 2005

Acknowledgements

CAPD staff in Hospital Kuala Lumpur