

# Peri-operative alpha-blockade: Efficacy of intravenous Phenoxybenzamine versus oral Phenoxybenzamine in patients with phaeochromocytoma and paraganglioma

Hussain S, Gunganah K, Carpenter RA, Ashby M, Druce M, Drake WM, Akker SA

Department of Endocrinology, St Bartholomew's Hospital, London, EC1A 7BE, United Kingdom

Barts and The London **NHS**  
NHS Trust

## Introduction

Phaeochromocytomas and extra-adrenal paragangliomas are rare tumours arising from neural crest tissue that develop into sympathetic and parasympathetic paraganglia throughout the body.

Phaeochromocytomas and paragangliomas are often surgically curable. However, without the appropriate preparation resection of these tumours can be fatal.

Regimens for pre-operative alpha and beta-blockade for patients with secretory phaeochromocytomas/paragangliomas vary widely between centres.

The worldwide lack of availability of intravenous phenoxybenzamine (Goldshield) has removed a useful tool in the management of phaeochromocytoma crisis and has necessitated a change in our institution's routine pre-operative strategy.

We compare pre, peri and post-operative surrogate measures of blockade in a cohort of patients receiving intravenous (iv) phenoxybenzamine with an oral regimen.

## Methods

We identified all the patients that underwent resection of catecholamine secreting phaeochromocytoma or paraganglioma at St Bartholomew's Hospital, London. Of 41 patients with phaeochromocytoma or paraganglioma seen between 2009-2012, 19 patients were included in this retrospective audit.

The pre-, peri- and post-operative medical, surgical, nursing, anaesthetic and fluid balance records of all 19 patients were reviewed.

Patients were only included if the same surgeon (RAC) and anaesthetist (MA) were present.

Patients who required blood transfusions were excluded from this study.

All patients had alpha blockade with oral phenoxybenzamine for at least 3 weeks prior to surgery. In the immediate 3-day pre-operative period 5 patients had accelerated oral phenoxybenzamine therapy +/- intravenous fluids and 14 patients had intravenous phenoxybenzamine +/- intravenous fluid.

We assessed intraoperative parameters of alpha blockade efficacy including requirement for sodium nitroprusside (SNP) and intravenous fluids.

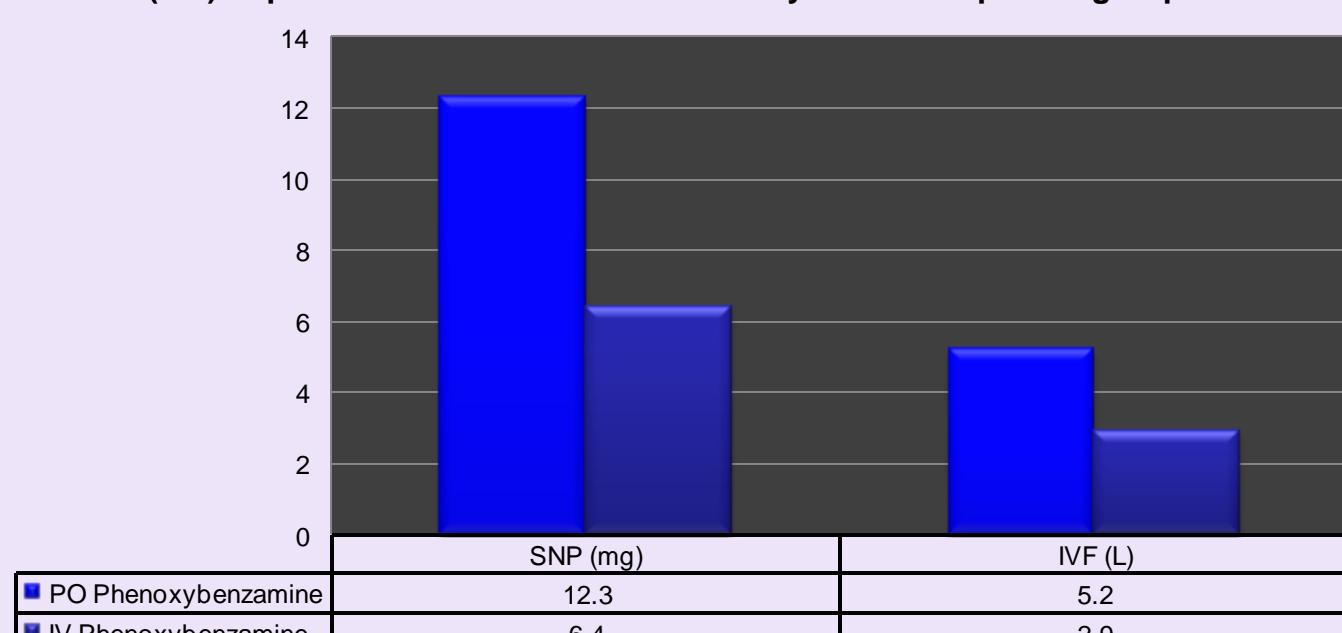
We assessed postoperative fluid requirement, use of and response to adrenaline, blood pressure and heart rate variability.

## Results

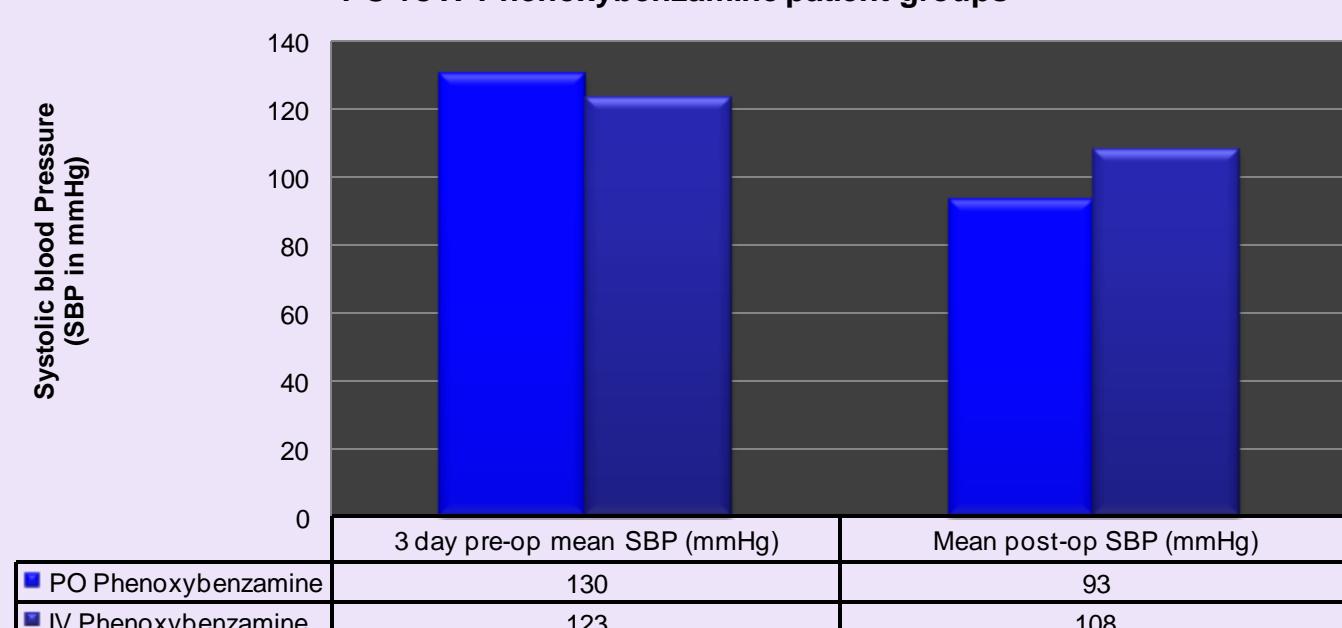
Patients treated with iv phenoxybenzamine pre-operatively required:

- ❖ less SNP
  - ❖ less intra-operative intravenous fluids compared to patients treated with oral phenoxybenzamine.
- Also,
- ❖ the mean systolic BP in the 3-day pre-operative period was lower in the iv group whilst the immediate post-operative systolic BP was higher in the iv group

A graph comparing Sodium Nitroprusside (SNP) and intravenous fluid (IVF) requirements in the PO vs IV Phenoxybenzamine patient groups



A graph comparing the mean pre-op and immediate post-op SBP in the PO vs IV Phenoxybenzamine patient groups



## Conclusions and Discussion

Catecholamine secreting tumours are associated with a variable clinical course during anaesthesia and surgical manipulation. Effective management of these complex tumours requires aggressive pre-operative preparation. Although a small cohort, the data suggest that patients treated with iv phenoxybenzamine prior to surgery:

- ✓ have better pre-operative BP control
- ✓ require less intraoperative intervention
- ✓ have less post-operative hypotension

than patients treated with oral phenoxybenzamine.

We invite other centres to report their experience.