

# Distribution of Gentamicin in Ischaemic Peripheries

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## Introduction

Peripheral Arterial Disease (PAD) is a condition which is more prevalent in patients with diabetes and is characterised by atherosclerotic occlusion of the peripheral arteries, normally the lower extremities.<sup>1</sup> Foot ulcers and infections commonly develop in these patients and are a major cause of morbidity that generally lead to gangrene, hospitalisation and amputations.<sup>2</sup>

## Aim

To analyse the distribution of gentamicin in patients with PAD.

## Method

- Ethics approval was obtained
- Patient consent was obtained
- A validated patient profile form was filled in
- Blood and tissue samples were collected from patients being treated with gentamicin and undergoing a debridement or amputation procedure at Mater Dei Hospital
- Dose of gentamicin: 240mg once daily i.v.
- Data was analysed using SPSS version 17.0

## Extraction and Analysis

- The blood samples were collected in red vacutainers, centrifuged at 3000g for 5 minutes and the supernatant collected
- The tissue samples were collected in sterile plastic containers and digested using a sodium hydroxide method
- The supernatant and tissue extract were analysed using Fluorescence Polarisation Immunoassay using the Abbott TDxFLx Analyser

## Results

- Total number of patient: 41
- Blood samples were analysed from all patients
- Skeletal muscle tissue was analysed from 28 patients
- Subcutaneous tissue was analysed from 26 patients
- When available, both skeletal muscle tissue and subcutaneous tissue were analysed
- Gender: Male (24), Female (17)
- Age: Mean 67 years, Range 31 to 91 years
- Diabetes: Type 2 (29), Type 1 (6), No diabetes (6)
- Level of PAD: 14 Triphasic (control group: no PAD), 10 Biphasic (moderate PAD), 17 Monophasic (severe PAD)

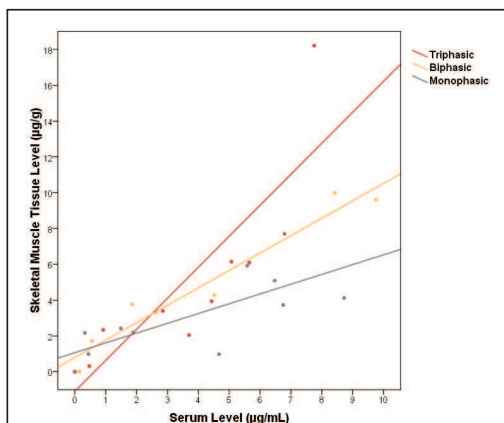


Figure 1: Skeletal muscle tissue level (µg/g) against serum level (µg/mL) for patients with varying degrees of PAD (n = 26)

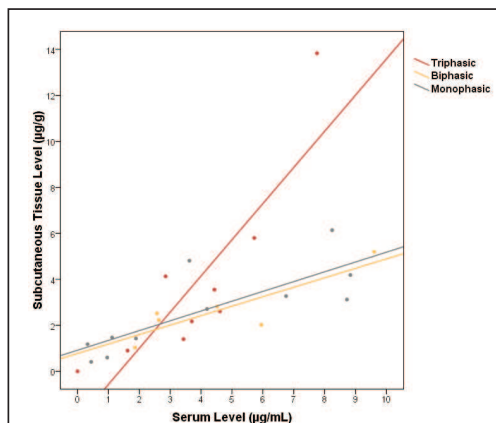


Figure 2: Subcutaneous tissue level (µg/g) against serum level (µg/mL) for patients with varying degrees of PAD (n = 26)

Figures 1 and 2 show the level of gentamicin in skeletal muscle tissue and subcutaneous tissue respectively against the level of gentamicin in serum for patients with varying degrees of PAD.

## Conclusion

Large inter-patient variability exists when comparing the serum and tissue levels from different patients. As the level of gentamicin in serum increases, the level of gentamicin in skeletal muscle tissue and subcutaneous tissue increases to a lesser extent in patients with moderate to severe PAD when compared to patients with no PAD.

## References

1. American Diabetes Association. Peripheral arterial disease in people with diabetes. *Diabetes Care* 2003; 26(12): 3333-3341.
2. Bansal E, Garg A, Bhatia S, Attri AK, Chander J. Spectrum of microbial flora in diabetic foot ulcers. *Indian J Pathol Microbiol* [serial online] 2008; 51: 204-208 [cited 2009 Jul 14]. Available from: URL: <http://www.ijponline.org/article.asp?issn=0377-4929;year=2008;volume=51;issue=2;page=204;epage=208;aulast=Bansal>.