Norfolk and Norwich University Hospitals NHS
NHS Foundation Trust

The Role of Albumin-Creatinine Ratio and Alkaline Phosphatase in the Assessment of Erectile Dysfunction

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Background

Albumin-creatinine ratio (ACR) is a marker of endovascular dysfunction. Increased ACR has been associated with higher prevalence of erectile dysfunction (ED) in men with type 2 diabetes [1]. Studies have also demonstrated a link between ACR and high-sensitivity C-reactive protein (hs-CRP) whereas elevated hs-CRP was related to severity of ED on penile doppler ultrasound (PDUS) [2]. However, hs-CRP is not routinely used in clinical practice due to its expense and limited availability.

Alkaline phosphatase (ALP) is known to promote vascular calcification. The majority of research has examined this in relation to hyperphosphataemia due to chronic renal failure, Genetic deficiencies in ALP inhibitors, i.e. pyrophosphate, have also been shown to increase vessel calcification [3,4].

We hypothesised that ACR is related to severity of ED in men with or without diabetes. As a secondary objective, we also examined the relationship between ALP and severity of ED.

Materials and Methods

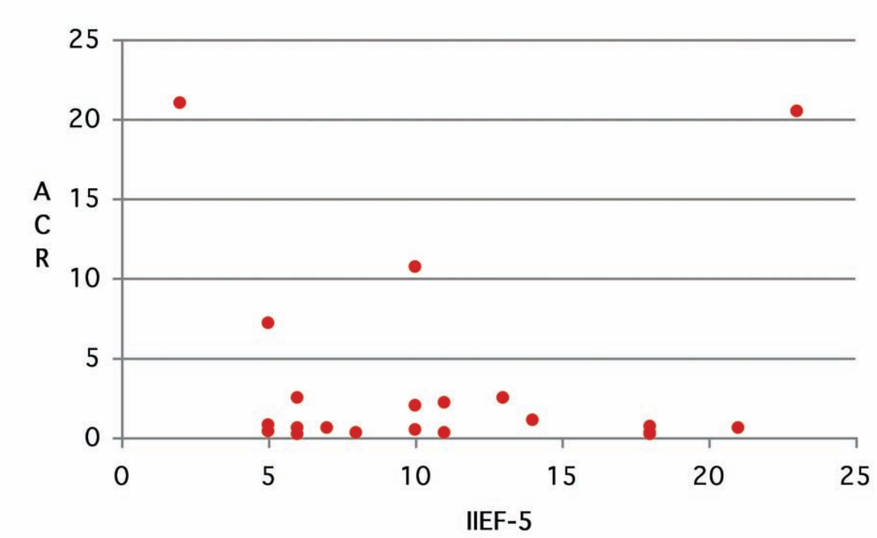
- 39 men with ED were recruited to the study.
- We subdivided patients depending upon the likely cause of their ED.
- Each participant completed an international function of erectile dysfunction 5 (IIEF-5) questionnaire to assess the severity of ED.

We then looked at each individual's urinary ACR and serum ALP using PRISM for statistical analysis of the results.

Results

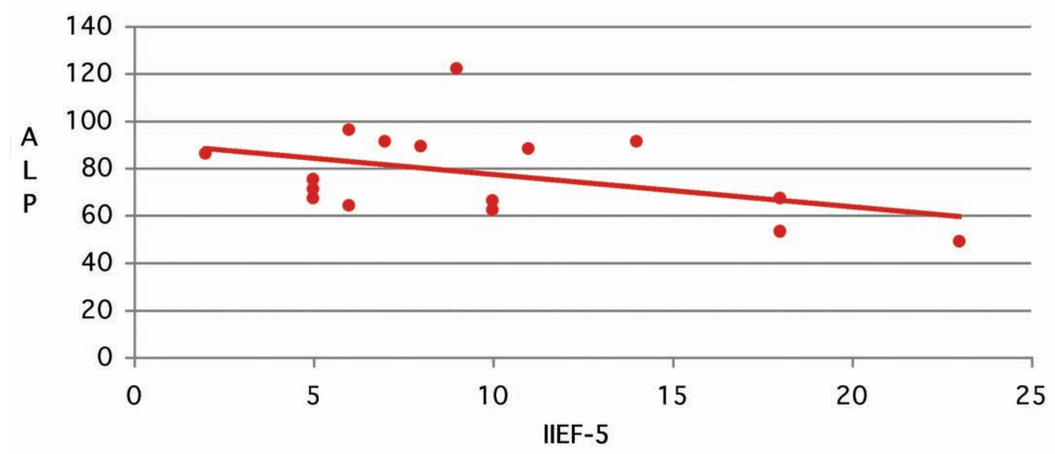
- Mean participant age was 59 years.
- Risk factors included diabetes (26%),
  - ischaemic heart disease (15%),
  - hypertension (38%) and smoking (33%).
- Statistical analysis indicated **no association between ACR and IIEF-5** in our sample population. This was also true within the sub-group of men with diabetes and a vascular cause of ED.

ACR against IIEF-5



Results did show that **higher ALP was related to more severe ED,** although this did not reach a level of significance (p=0.1, n=24).

ALP against IIEF-5 in vascular ED



Conclusion

Our results suggest that ACR is not associated with ED severity, in relation to IIEF-5 score. The main limitation to the study is our small sample size and assessment of ED severity. Previous studies used PDUS to grade severity, which is a more objective measure. Our results did indicate that elevated ALP in vascular ED was related to increased severity though this requires further research. Future studies in this area may help provide a simple biochemical marker for use in assessing ED.

References

1. Thomas NG *et al. Diabetes Care.* 2005; 28(8): 2051-2053 **2.** Bank AJ *et al. IJIR.* 2003; 15: 231-236 **3.** Scoppet M, Shanahan CM. *Kidney Int.* 2008; 73(9): 1024-30 **4.** Demer LL, Tintut Y. *Circ. Res.* 2006; 98; 857-859

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