Assessing Evidence That Fibromuscular Dysplasia Causes Chronic Kidney Disease: A Two-Sample Mendelian Randomization Study

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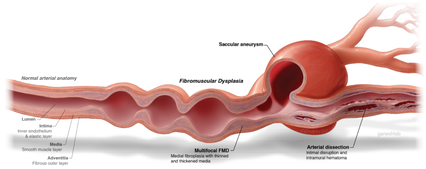
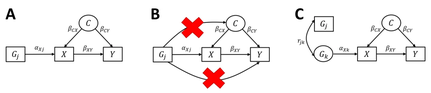
Introduction

Fibromuscular dysplasia (FMD) is a systemic disease of artery walls that decreases target organ perfusion. Investigators have identified **chronic kidney disease (CKD)** as a possible consequence.



- FMD often affects renal arteries [Oli+12].
- FMD complications include stroke, dissection, & aneurysm [Oli+12].

Mendelian Randomization



[Lee+22]

Two-sample MR with GWAS Summary Statistics

- FMD GWAS [Geo+21]
- CKD GWAS [18]

Imperial College London

We failed to detect a causal effect of FMD on CKD. However, due to the **small number of relevant SNPs**, we had **limited power**.

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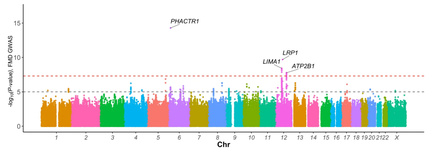
FMD GWAS Meta-analysis [Geo+21]

- Six case-control studies from USA and Europe
- 1556 cases & 7100 controls
- Tested 5.5 million SNPs
- Identified four risk loci for FMD: *PHACTR1, LRP1, LIMA1, ATP2B1*



CKD GWAS [18]

- 194,174 female UKB subjects – check number of missing for this trait!

Conclusion

This is a great poster format!

References

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[Lee+22] Christiaan de Leeuw et al. "Understanding the assumptions underlying Mendelian randomization". In: *European Journal of Human Genetics* 30.6 (2022), pp. 653–660.

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Poster repository: `https://github.com/fboehm/statgen2024`

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