

Plasma Markers of Neurodegeneration Associated with Postoperative Delirium in an Older Elective Arthroplasty Population



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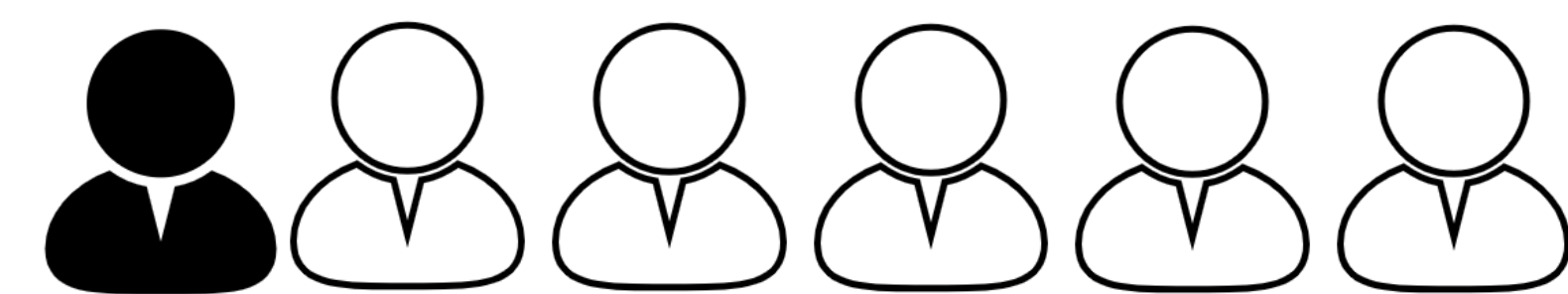
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Background

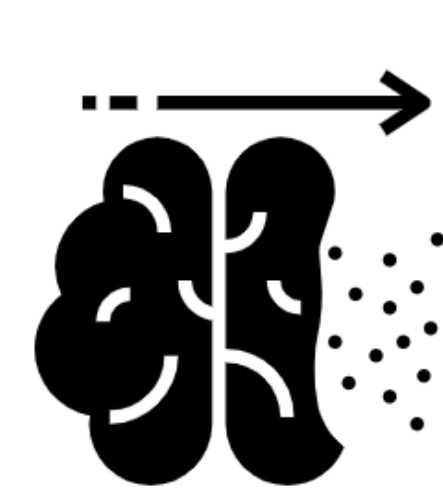
Postoperative Delirium

Delirium is an acute change in consciousness, which is fluctuating in nature and accompanied by disturbances in attention, perception and cognition [1]. Postoperative delirium (POD) is a common complication in older adults undergoing elective surgery, with an estimated incidence of 17% in elective orthopaedic surgery [2].

1 in 6
Post-operative Delirium



Delirium is associated with a host of long-term complications, including dementia [1]. It is not yet clear to what extent POD is due to underlying neurodegeneration.



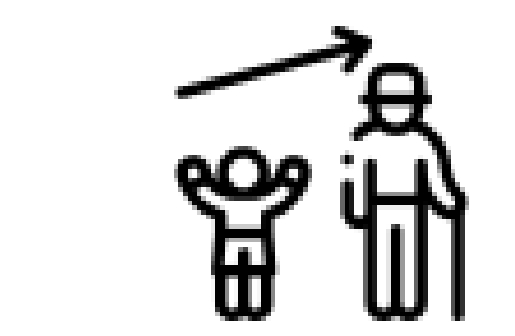
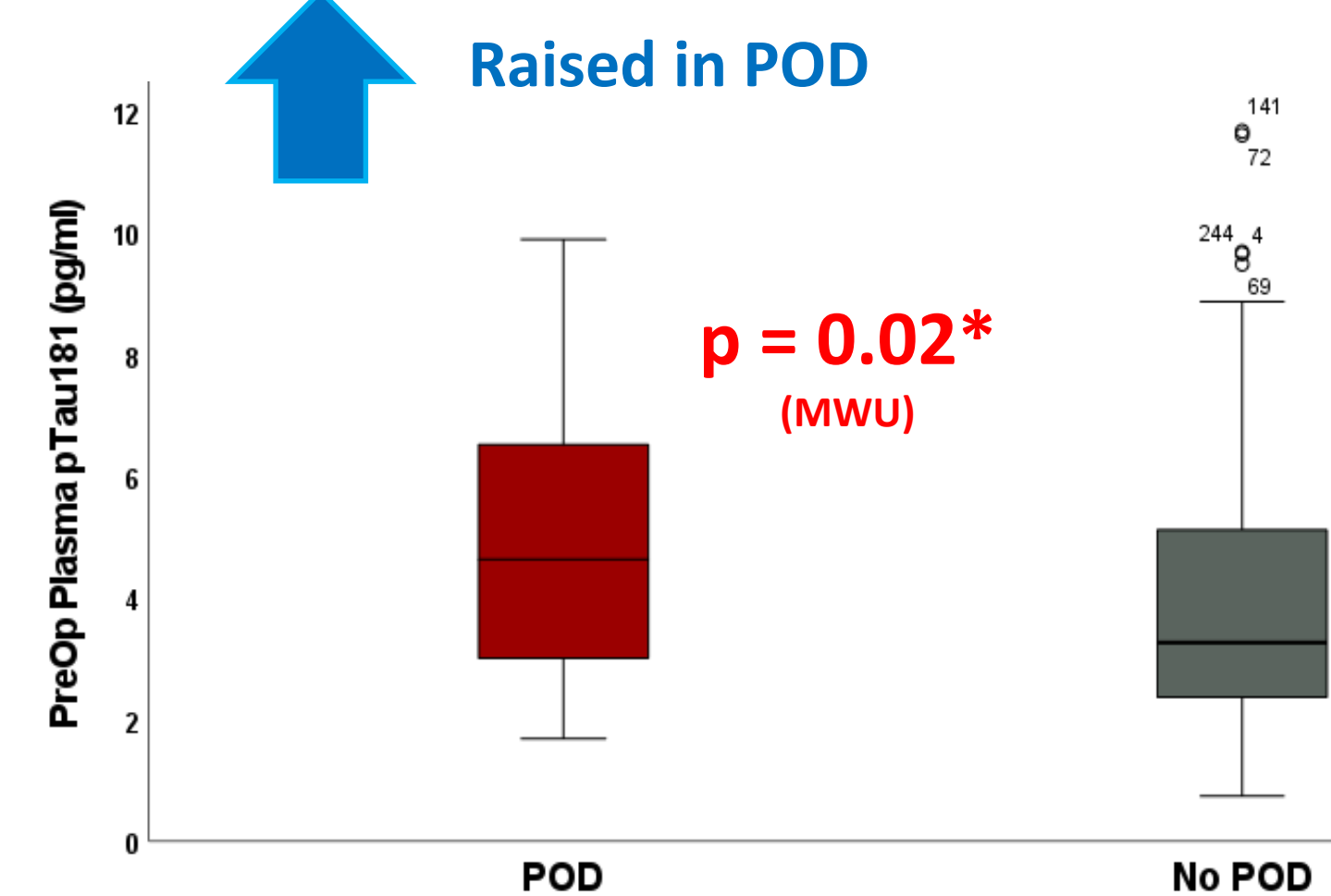
This study

In 2012-2014, an observational cohort study of postoperative delirium (POD) in an elective arthroplasty population recruited 315 individuals without a diagnosis of dementia aged over 65. Blood and CSF were sampled perioperatively and analysed for biofluid markers of inflammation and neurodegeneration.

Results

PreOperative Plasma Markers Associated with POD

PreOperative Phosphorylated-tau-181 Concentration



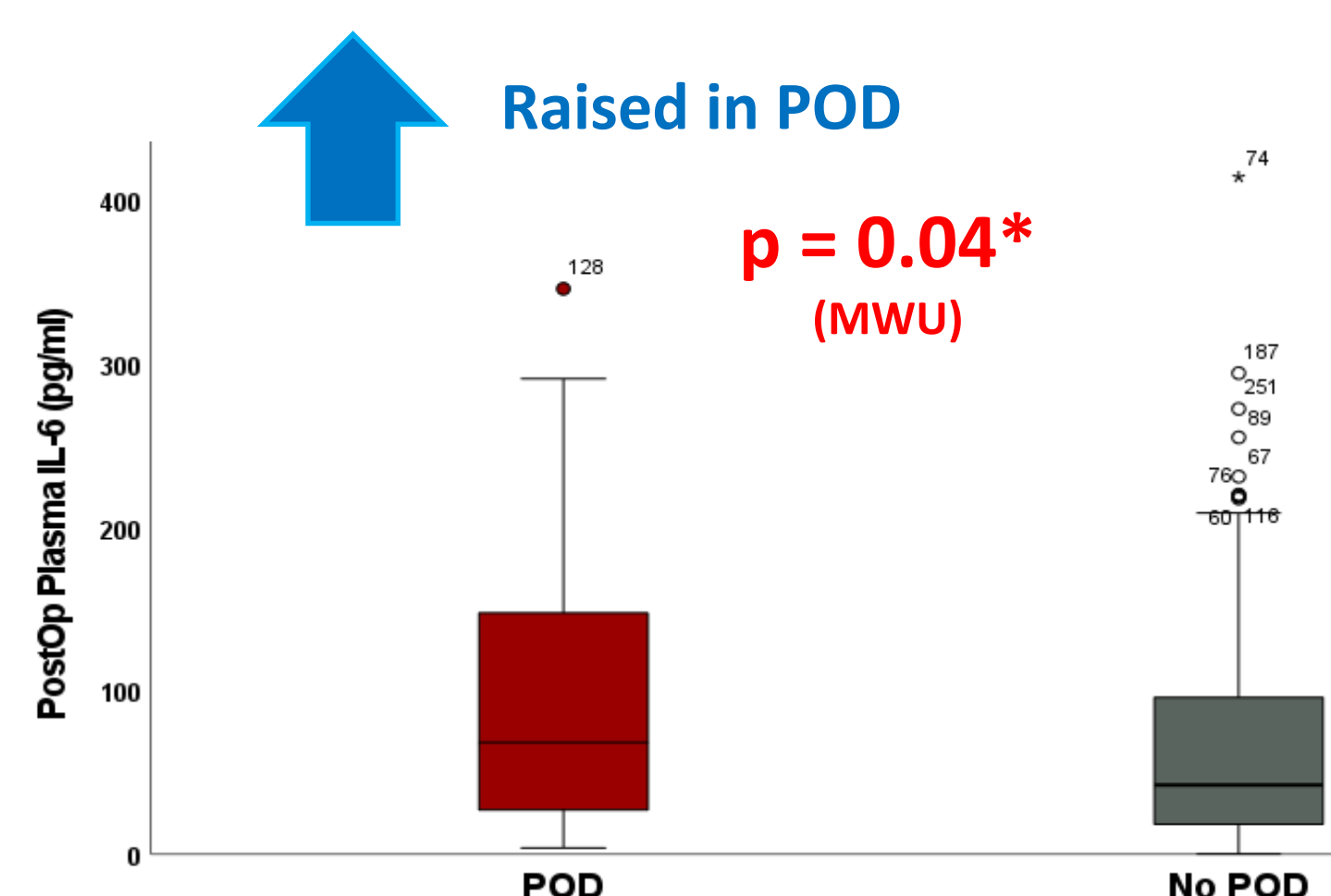
74.2 years

14%
(n=44)
POD

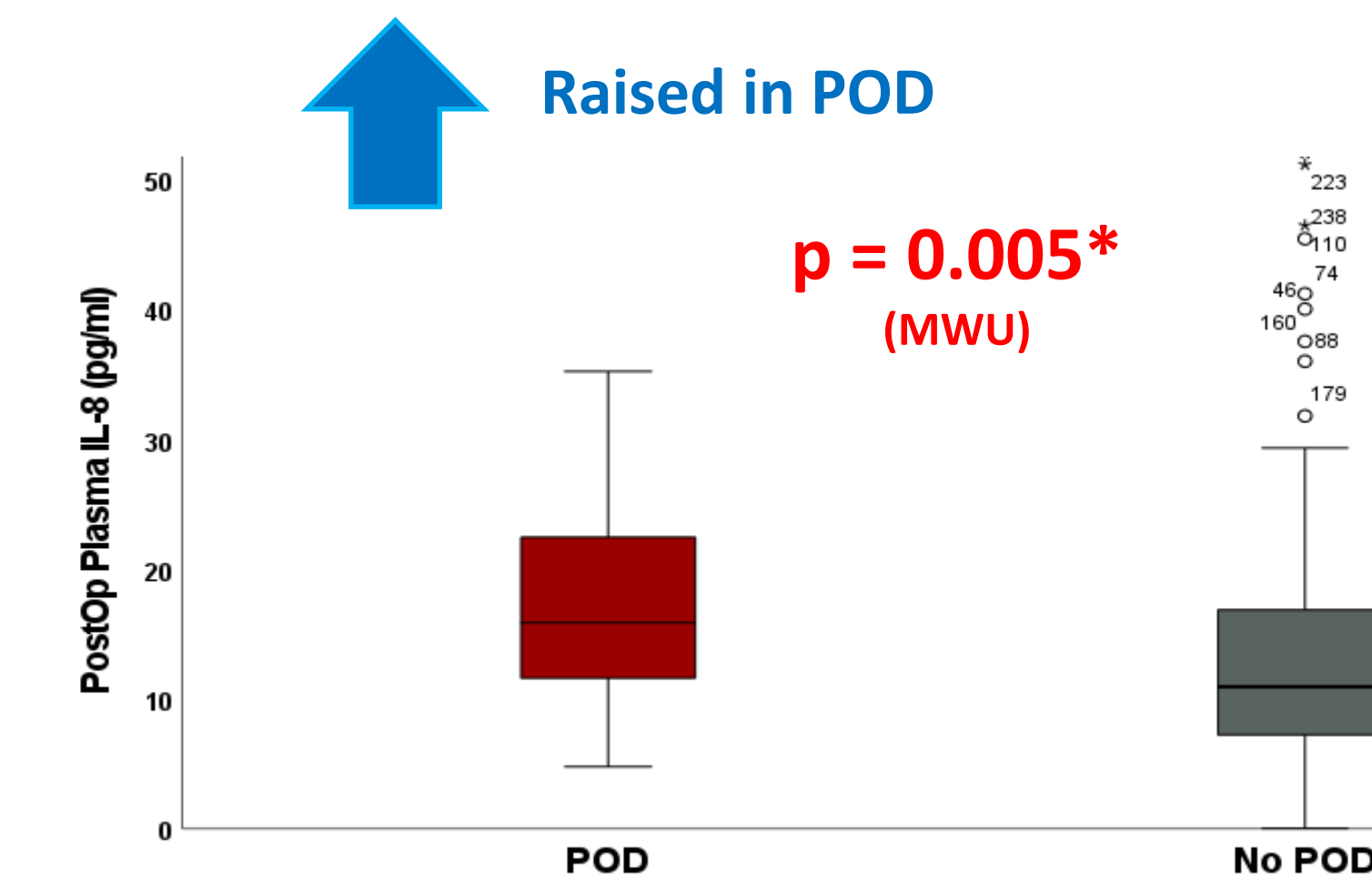
No other preoperative plasma markers of inflammation or neurodegeneration were associated with POD ($p < 0.05$).

PostOperative Plasma Markers Associated with POD

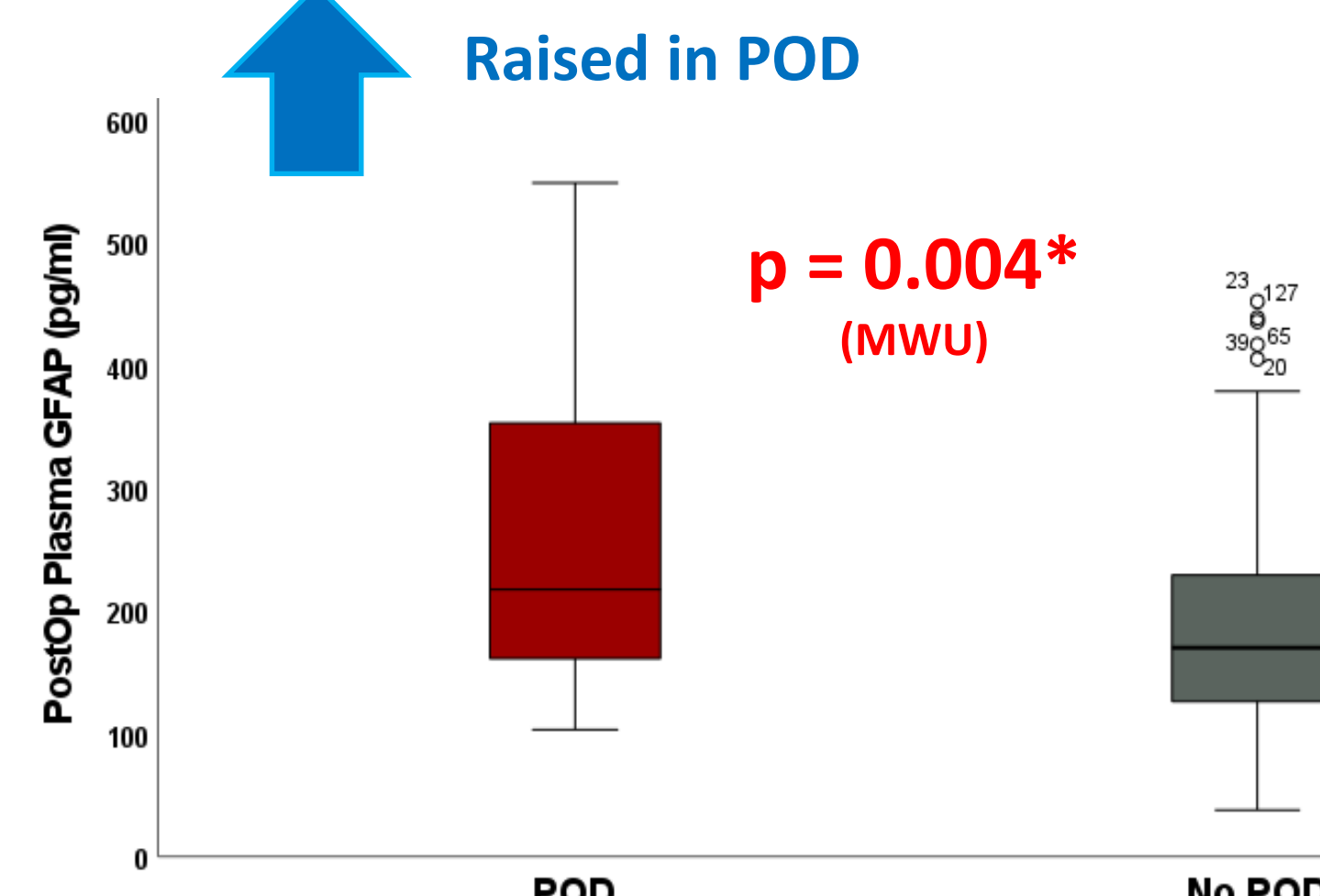
PostOperative Interleukin-6



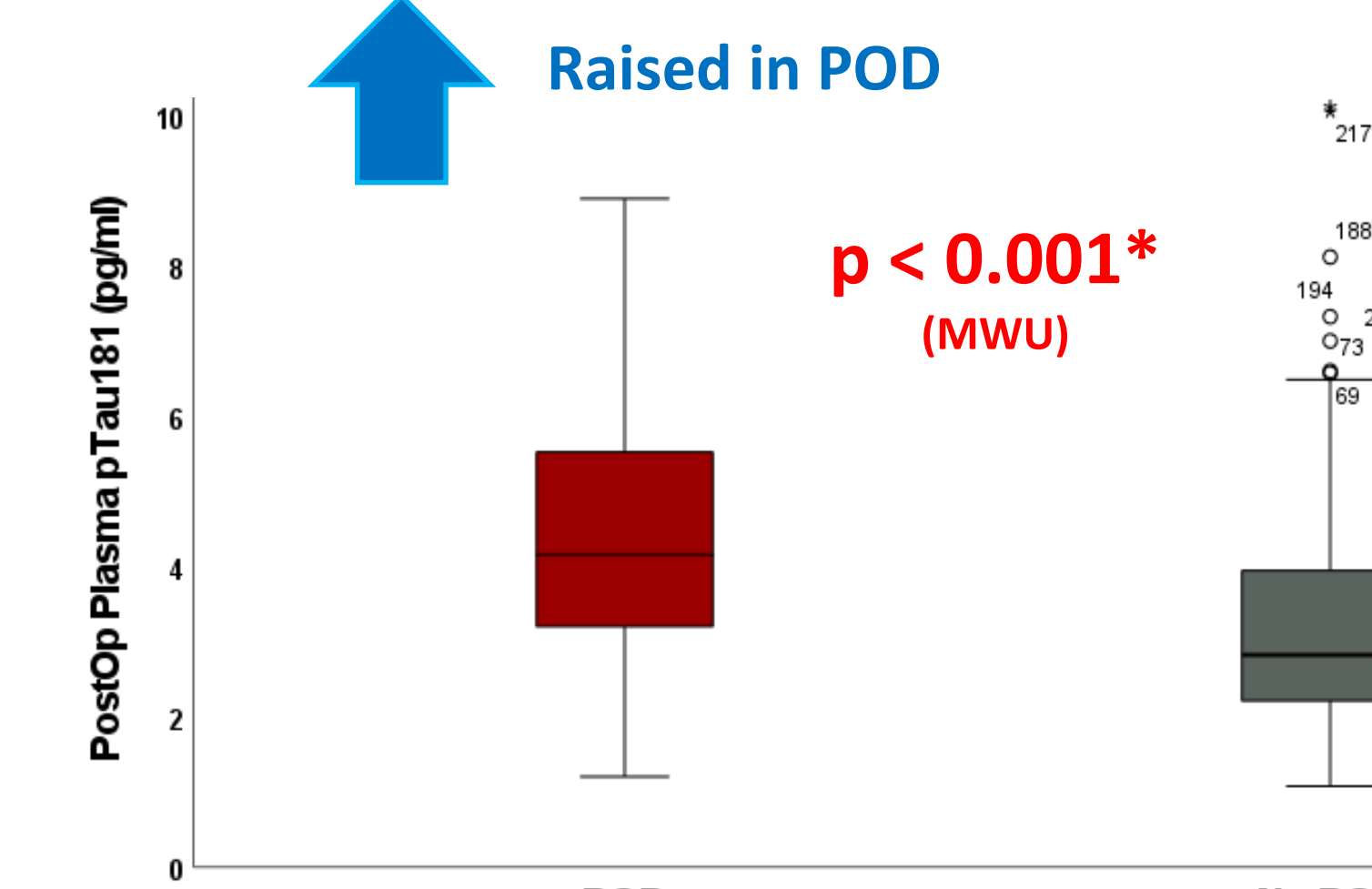
PostOperative Interleukin-8



Glial Fibrillary Acidic Protein



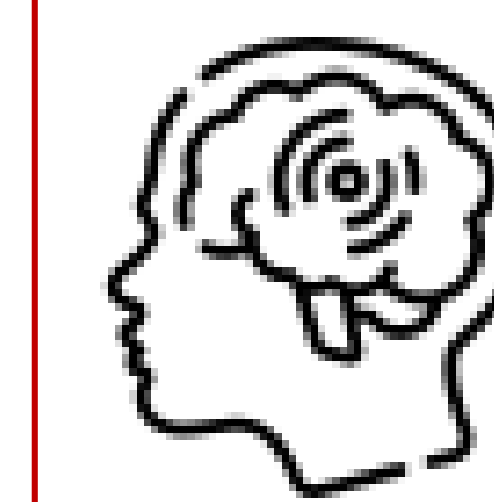
Phosphorylated-tau-181



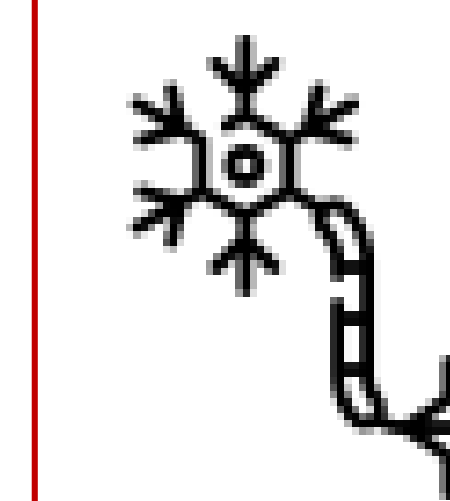
No other postoperative or perioperative plasma markers of inflammation or neurodegeneration were associated with POD ($p < 0.05$).

Since abstract submission, analyses which yielded results which were too low to be detected have been replaced with the minimum value detected for that plasma marker to avoid biased results. The results are therefore different than those reported in the abstracts. The authors are happy to discuss – please see contact details.

Conclusions



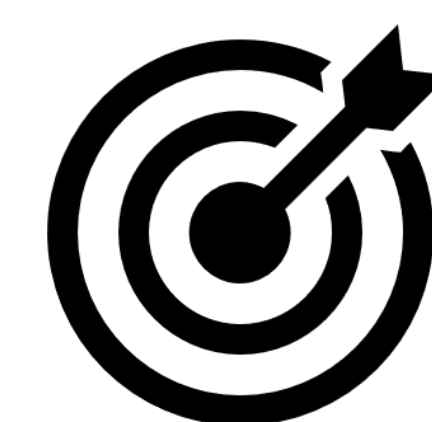
In an older elective arthroplasty population, people who developed POD had a profile of preoperative plasma markers associated with neurodegeneration.



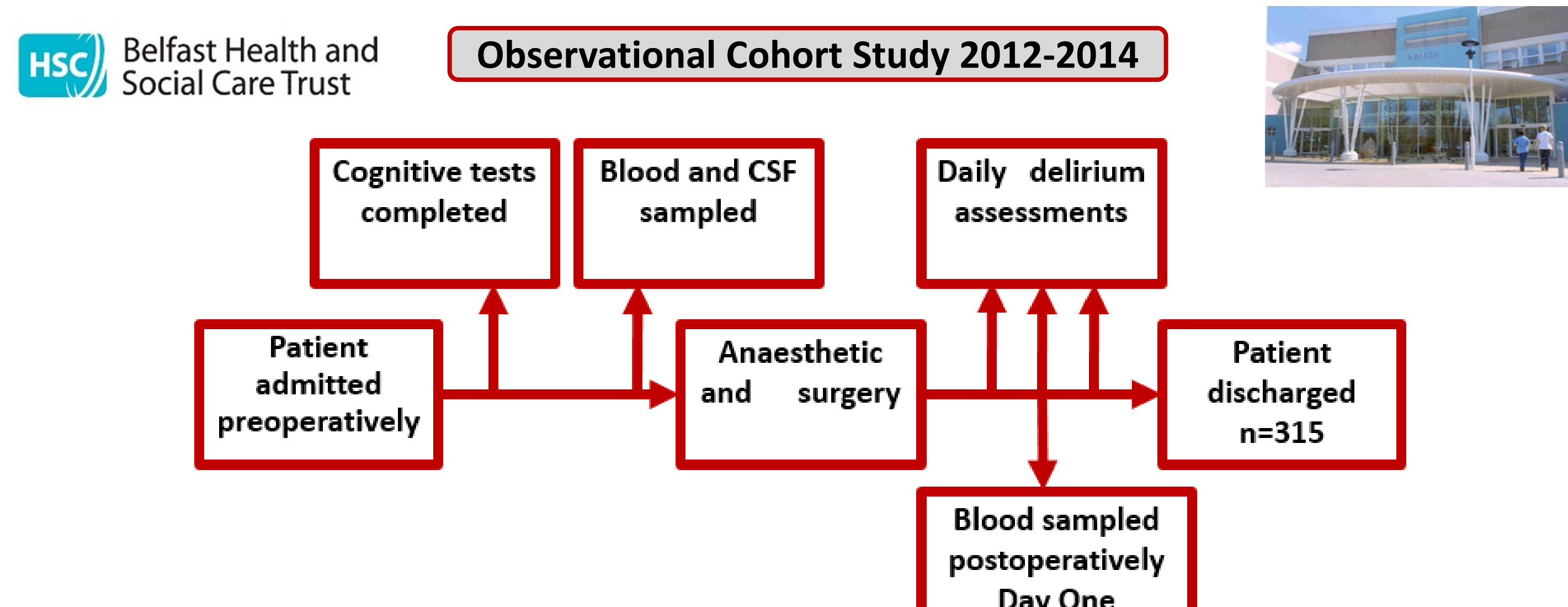
People who developed POD also had a profile of postoperative plasma markers in keeping with inflammation and neurodegeneration.

Aims

- Determine if preoperative plasma markers of inflammation and neurodegeneration are associated with the development of POD
- Determine if postoperative plasma markers of inflammation and neurodegeneration are associated with the development of POD
- Determine if pre-post operative change in these plasma markers are associated with POD



Methods



Plasma Inflammatory Markers

- Interleukin-1 β
- Interleukin-6
- Interleukin-8
- Tumour Necrosis Factor- α

Plasma Neurodegenerative Markers

- A β 40 and A β 42
- Neurofilament Light (NFL)
- Glial Fibrillary Acidic Protein (GFAP)
- Phosphorylated-tau-181 (pTau-181)

References

- Psychiatric AA. Diagnostic and Statistical Manual of Mental Disorders. In: 5th ed. Washington, DC: American Psychiatric Association; 2013.
- Scott JE, Mathias JL, Kneebone AC, 2015. Incidence of delirium following total joint replacement in older adults: a meta-analysis. *Gen Hosp Psychiatry*, 2015, 37(3), pp.223-9.

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contact me!



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