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Inflammatory Marker Levels among Patients Diagnosed with Autism Spectrum Disorder and Congenital Heart Defects

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Inflammatory marker levels among patients diagnosed with Autism Spectrum Disorder and Congenital Heart Defects

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Abstract

Autism Spectrum Disorder (ASD) and congenital heart defects (CHD) are conditions that both confer an immense increase in standard of care, and utilization of medical resources addressing comorbidities. One shared symptom that has been consistently cited is inflammation. This review sought to explore the levels of Tumor Necrosis Factor- α (TNF- α) and Interleukin-6 (IL-6) between patients diagnosed as having either ASD or CHD. By compiling published data containing the mean values of these two inflammatory markers within these populations, it was shown that while both have significantly elevated levels compared to a phenotypically normal demographic, there is no significant difference between IL-6 levels in ASD vs. CHD patients. However, there are significantly higher levels of TNF- α in CHD patients compared to ASD patients. Understanding the relationship of inflammatory markers would help guide better treatments and outcomes in ASD population, especially to those with CHD.

Methods

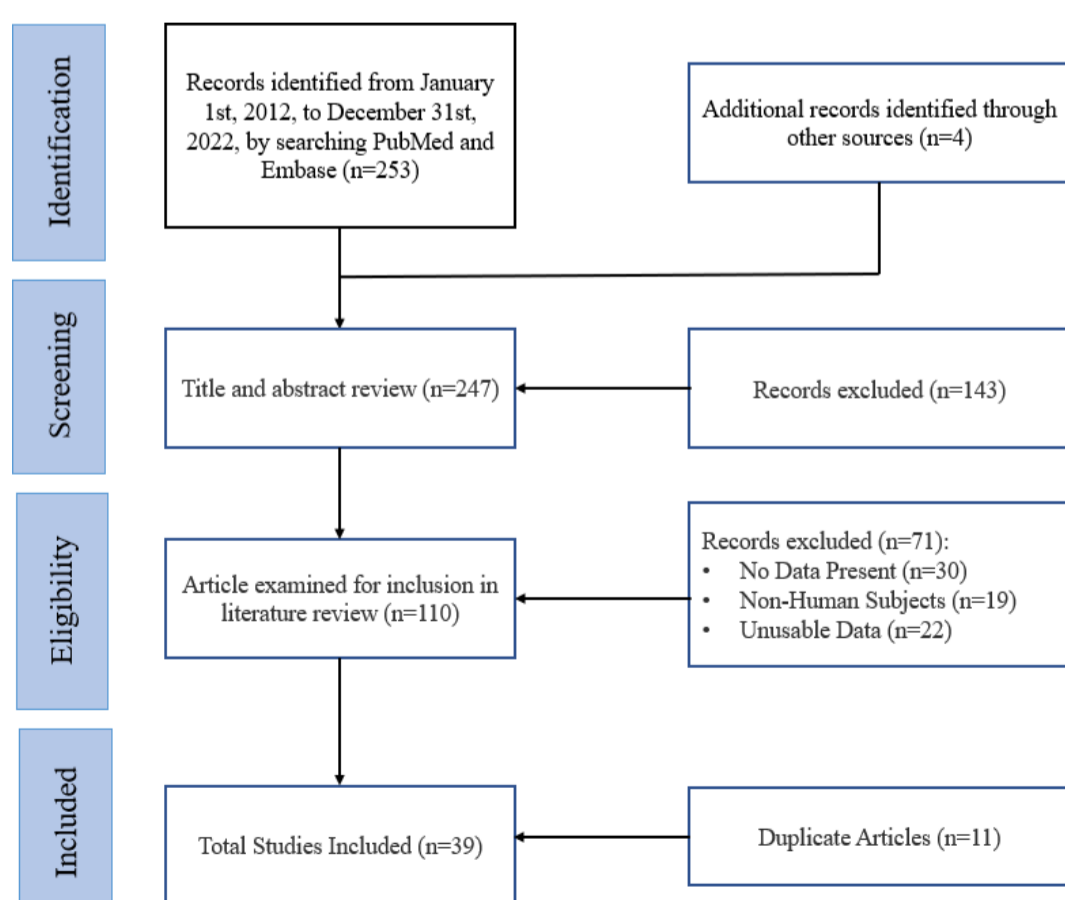


Figure 1: PRISMA flow chart showing article selection process for this literature review

Data/Results

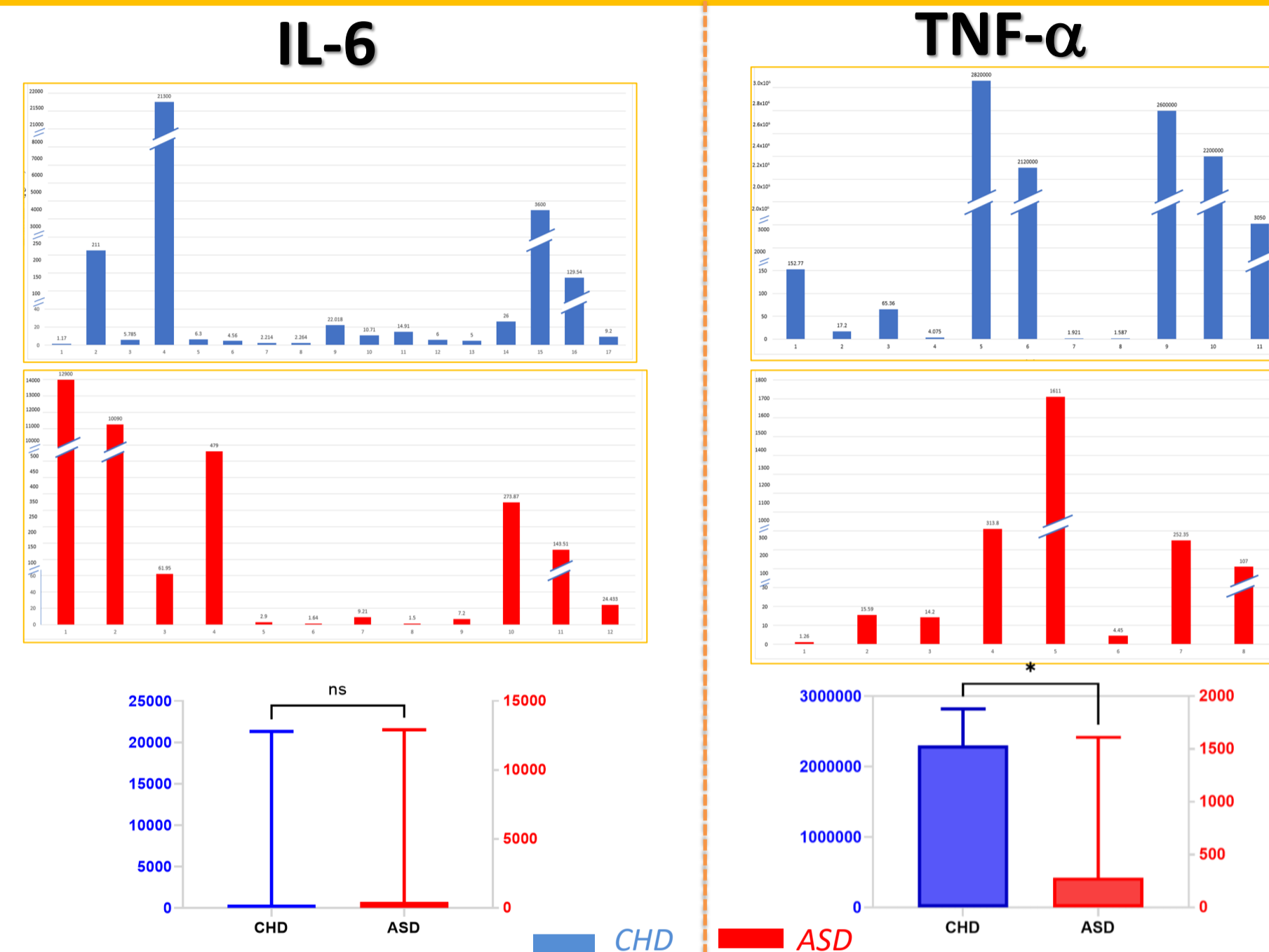


Figure 2: Mean levels of inflammatory markers reported and analyses: Levels of IL-6 and TNF- α were compiled for CHD and ASD from publications and are presented (Bar graphs). T-test with Welch's correction indicates that there is a statistically significant difference for TNF- α but not IL-6 (Box and Whisker plots).

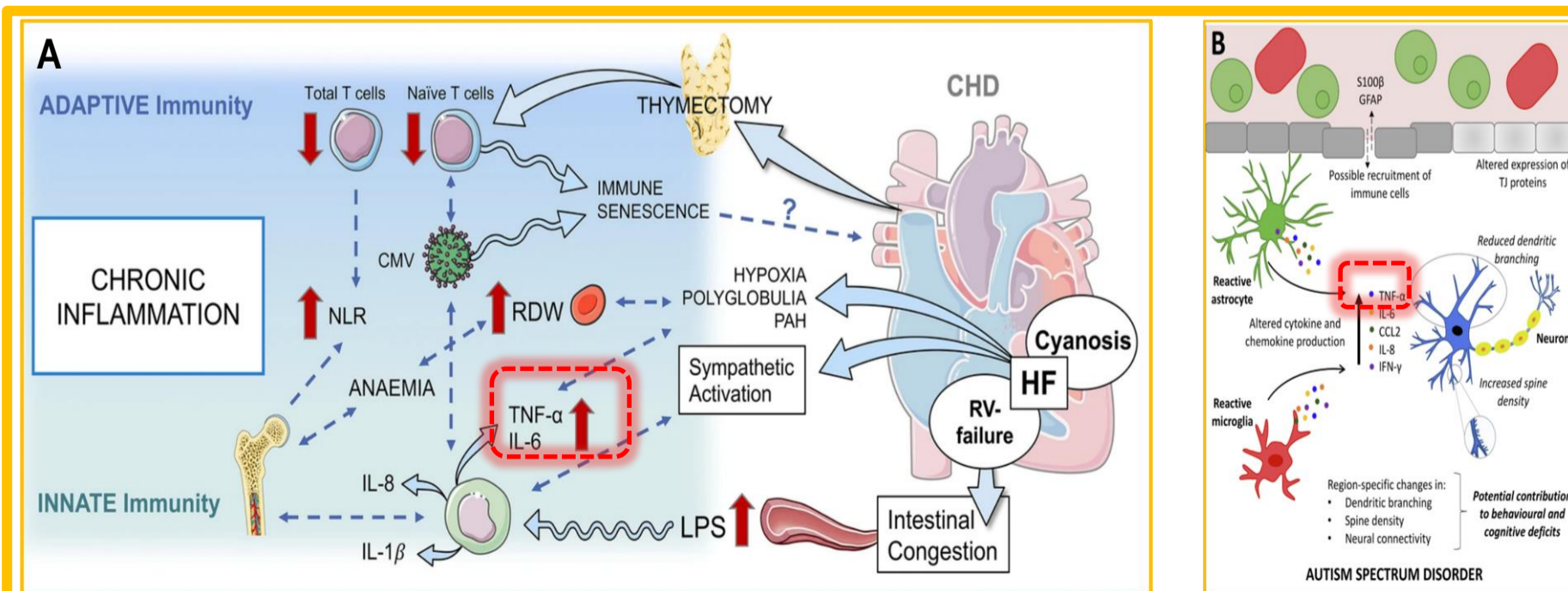


Figure 3: Inflammatory Markers and Pathophysiology: (A) CHD; reproduced from figure 1 of Matta et al. (B) ASD; Reproduced from Wiencke et al. TNF- α and IL-6 – inflammatory markers analyzed here – have been highlighted with rectangle

Conclusions

- Significantly increased levels of TNF- α and IL-6 in CHD and ASD patients
- Both groups showed a wide variability in marker levels
- No significant difference between IL-6 in ASD and CHD
- Significant difference between TNF- α in CHD and ASD patients compared to non-affected peers

Future Directions

Investigations will be focused on answering the following questions:

- Could inflammatory markers such as TNF- α be investigated as a marker (vs echocardiography) in screening ASD patient for CHD?
- Would this approach improve CHD detection and treatment in patients with ASD?

References

