Adverse Childhood Experiences Predispose to Premature Vascular Dsyfunction in Young Adults

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Introduction

- Cardiovascular disease is the leading cause of death worldwide.
- Adverse Childhood Experiences (ACEs) are traumatic events in childhood that are known to increase the risk for future health complications.
- Current data suggests that ACE exposure increases the risk for developing cardiovascular disease.
- Propper vascular function is critical for maintaining cardiovascular health and detriments are one of the earliest steps in CVD pathogenesis.

Purpose

This study sought to test the hypothesis that exposure to ACEs leads to worsening vascular function in young adults.

Methods

Subjects. Twelve young adults participated in a single experimental visit evaluating macrovascular function and arterial stiffness. Participants, aged 21 (±3), were divided into high (5 or more) or low ACE groups

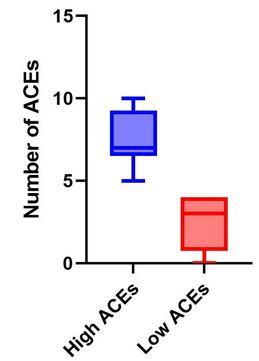
Macrovascular Function. Flow-Mediated Dilation was used to noninvasively evaluate endothelial function. Briefly the diameter of the brachial artery was measured via a ultrasound probe before, during, and after a 5 minute bout of arterial occlusion.

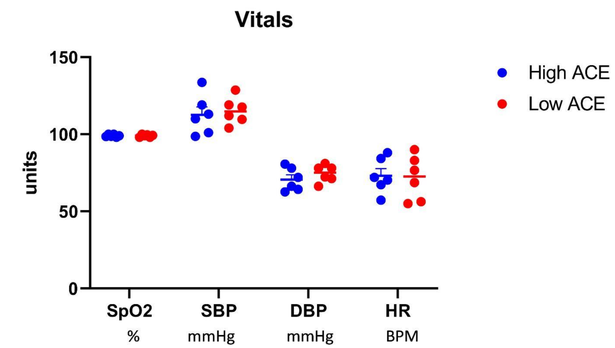
Arterial Stiffness. Carotid Femoral Pulse Wave Velocity (cfPWV)was used to noninvasively evaluate Arterial Stiffness. Briefly a blood pressure cuff was placed on the femoral artery while a probe imaged the pulse waveform at the carotid artery.The speed of pulse propagation between these sites was than measured and used as an indicator of arterial stiffness.

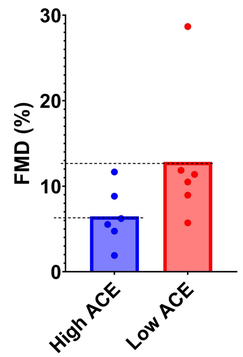
ACEs. ACEs were measured using a CDC validated questionnaire in the household of the participant

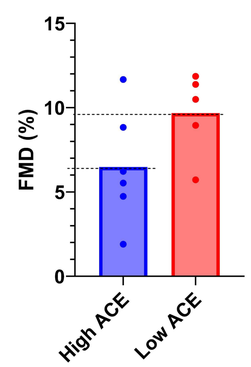
Results

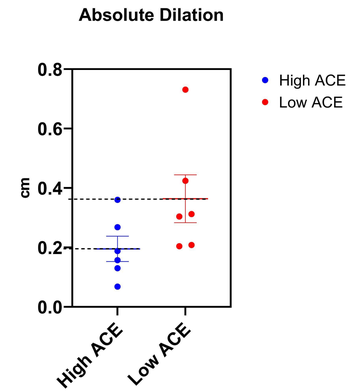
Demographics	Low ACE	High ACE	p-value
Age	21±3	21±3	0.33
Height	163.8±5	167.5±18	0.178
Weight	59.1±12	62.7±13	0.29
BMI	22±5	21.8±5	0.469
HR	71.6±19	73.2±16	0.451
SBP	115.1±14	112.5±21.2	0.377
DBP	74.5±6	70.7±10	0.232
Sp02	99±1	99±1	0.365
ACEs	2±2	7.5±2.5	0.0003

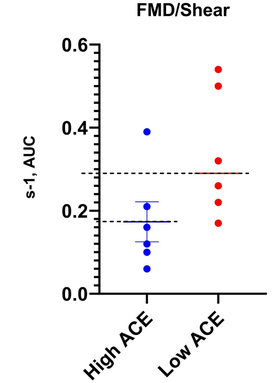


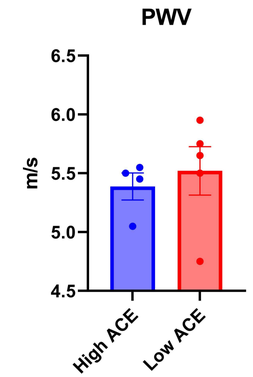












Conclusions

Preliminary results suggest that individuals exposed to a greater number of ACEs exhibit premature vascular dysfunction. To note, those individuals that suffered adverse events early in life present a greater risk to develop CVD. Our data suggests individuals exposed to 5 or more ACEs exhibit a 70% increased risk for CVD development later in life. Future research should expand these results and investigate when in life the cardiovascular system becomes impacted by ACEs in order to better screen and treat at risk individuals.

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