

aortic dilation is already present. Therefore, we measured the impact of drugs (the renin-angiotensin system inhibitors losartan and enalapril) on survival and thoracic aortic growth in a mouse model of Marfan syndrome when extensive aortic dilation was already present. **METHODS/STUDY POPULATION:** Male and female fibrillin-1 hypomorphic (FBN1 mgR/mgR) mice (n=10-12/group) were stratified into treatment groups by aortic diameter at 6 weeks of age to ensure an equivalent average aortic diameter in each group at the start of the study. Osmotic mini pumps filled with PBS (vehicle), enalapril (2 mg/kg/d), or losartan (20 mg/kg/d) were implanted subcutaneously into mice after stratification. Mini pumps infusing drug or vehicle were replaced every 4 weeks for a total duration of 12 weeks. Wild type littermates (n=10) were infused with PBS as a negative control to the Marfan mouse model. Ascending aortic diameters from male and female FBN1 mgR/mgR mice and their wild type littermates were assessed by ultrasound every 4 weeks from 6 to 18 weeks of age. Aortic diameters were measured luminal edge to luminal edge during diastole. **RESULTS/ANTICIPATED RESULTS:** 6 week old FBN1 mgR/mgR mice exhibited significantly dilated ascending thoracic aortas at study initiation compared to their wild type sex-matched littermates (in males: FBN1 mgR/mgR = 1.87 +/- 0.07mm, wild type = 1.23 +/- 0.07mm; p <0.001) (in females: FBN1 mgR/mgR = 1.56 +/- 0.07mm, wild type = 1.18 +/- 0.07mm; p <0.001). Baseline mortality of FBN1 mgR/mgR mice infused with PBS was 36% in male and 22% in female mice at the time of study termination. Within sex-matched mgR littermates, there was no significant difference in survival between groups treated with PBS, enalapril, or losartan after 12 weeks (p=0.224 for males, p=0.094 in females). In the same groups, no significant difference in maximum ascending aortic diameter was detected after treatment for 12 weeks (in males: PBS=2.69 +/- 0.19 mm, enalapril=2.04 +/- 0.27 mm, losartan=2.42 +/- 0.28 mm; p=0.24) (in females: PBS = 1.92 +/- 0.13, enalapril=1.89 +/- 0.31, losartan=1.98 +/- 0.17; p=0.86). Furthermore, aortic diameters in the FBN1 mgR/mgR mice were found to demonstrate sexual dimorphism. **DISCUSSION/SIGNIFICANCE OF IMPACT:** This research shows that losartan is not effective when administered after significant thoracic aortic dilation has already occurred in FBN1 mgR/mgR mice. This has important translational implications because losartan is usually not started in patients with Marfan syndrome until significant aortic dilation is already present. Therefore, more research needs to be done to determine the critical time period within which this medicine will be effective if given to patients. In addition, this research demonstrates that male FBN1mgR/mgR mice have a significantly larger aortic diameter than female FBN1mgR/mgR mice. This sexual dimorphism has recently been observed in patients with Marfan syndrome as well. Additional studies for understanding the mechanism underlying this sexual dimorphism have the potential to elucidate new therapeutic approaches for aortic disease.

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Restrictive feeding and excessive hunger in young children with obesity: A case series

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OBJECTIVES/SPECIFIC AIMS: The purpose of this case series is to show how helping parents instill a non-restrictive, structure-based (i.e., authoritative) approach to feeding is useful in addressing

family food conflicts in a clinical child obesity treatment program. **METHODS/STUDY POPULATION:** Case reports are presented for 3 young children (two 8-year-old males and one 7-year-old female) with obesity (BMI \geq 95th percentile for age and sex). Patients underwent family-based treatment at Brenner FIT[®] (Families In Training), an interdisciplinary tertiary weight management clinic. **RESULTS/ANTICIPATED RESULTS:** All patients experienced a period of rapid weight gain and/or severe onset obesity. Parents reported a combination of problematic eating behaviors (e.g., sneaking food, frequent complaints of hunger, vomiting from rapid consumption). Families implemented structure-based feeding with a meal-snack schedule and allowed children to eat until they were full from the food provided at meal-snack times. BMI z-score decreased from 2.19 to 2.07 in patient 1 and from 2.43 to 2.09 in patient 2 (follow-up weight was not available for patient 3). **DISCUSSION/SIGNIFICANCE OF IMPACT:** The improvements observed by our clinical program after families lifted restriction and instituted authoritative feeding is anecdotal evidence for the ecological validity of existing empirical work. Randomized controlled trials are needed to examine causality.

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Role of Interferon-gamma in Natural Clearance of Chlamydia trachomatis Infection in Women

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OBJECTIVES/SPECIFIC AIMS: Chlamydia trachomatis (CT) infection can lead to reproductive morbidity in women. Animal models suggest that protection against CT is mediated through the cytokine interferon-gamma (IFN- γ), produced by CD4+ T-cells, which clears CT through intracellular tryptophan depletion. In humans, correlates of protection remain to be elucidated, which hinders chlamydia vaccine development. Natural clearance of CT infection (e.g., clearance before antibiotics) may be an immunological correlate of protection, evidenced by (1) CT clearance without antibiotics; and (2) a 4-fold reduced risk of CT reinfection within 6 months. We have identified women with and without natural clearance of CT infection. By comparing these two groups of women, the role of IFN- γ -mediated natural clearance of CT infection will be investigated. **METHODS/STUDY POPULATION:** Through collaboration with a cohort study of CT-infected women, we have access to stored specimens from women who naturally cleared CT or had persisting CT infection. Using peripheral blood mononuclear cell (PBMC), we will assess whether natural clearance of CT infection is associated with IFN- γ -producing CD4+ T-cells by stimulating PBMC ex vivo with CT antigens using intracellular cytokine staining. We will also use cervicovaginal lavage (CVL) and untargeted High-Performance Liquid Chromatography-Mass Spectrometry to assess for tryptophan-dependent and -independent metabolic pathways associated with natural clearance of CT infection. **RESULTS/ANTICIPATED RESULTS:** To date, IFN- γ has been measured in 10 women who did not clear CT infection, demonstrating that <20% of these women produced significant levels of IFN- γ . Women who naturally cleared CT have yet to be studied. Untargeted HPLC-MS has been performed on 6 women (3 who cleared matched to 3 with persisting CT infection). To date, 11 pathways that are significantly associated with natural clearance have been identified. **DISCUSSION/SIGNIFICANCE OF IMPACT:** The outcome of natural clearance