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TITLE Obese children fMRI brain connections for food odor stimuli

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ABSTRACT

PURPOSE

Obesity is a precursor of health problems, In Mexico this condition affects more than 70% of the population It is known that odor/smell is one of the principal cues for the appearance and control of appetite To fight obesity it is crucial to understand the brain mechanisms of this stimulus There is no information on the changes in connectivity between brain regions for this age group. In this work we studied the different brain fMRI activations and connections between normal weighted (NW) and obese (OB) infants for different types of food odors.

METHOD AND MATERIALS

30 volunteers infants 8.4±2 15 males/15 females were studied Two cohorts of 15 subjects each were obtained from the sample one with BMI between 19 and 24 kg/m² (NW) and the other with BMI over 30 kg/m² (OB) Volunteers received 3 odor cues One was pleasant and represented caloric foods (chocolate) the second was healthy and presented low calorie foods (onion) the third was a neutral odor not associated with food (diluted acetone) We used a 1.5 T Philips Intera Achieva scanner using 35 coronal slices covering the whole of the brain were acquired with a Fast-Echo-EPI sequence over a period of 13.9 minutes TR=3s TE=50 ms 64x64 matrix with a 3.6 x 3.6 mm inplane resolution and 4 mm slice thickness Data was analyzed with SPM8 software Results for both analysis were corrected for multiple comparisons (FWE p<0.05) and data was presented overlaid on template images

RESULTS

All food smells presented larger activations in cerebellum for NW volunteers probably corresponded to the pleasure regulation function of this area The cingulate gyrus was much more active for OB infants when presented with food smells This response was possibly related to the emotional processing or the memory functions of this area These two findings clearly indicated different mechanisms of interpretation of these stimuli between

CONCLUSION

Clear differences in fMRI and connectivity between the OB and NW groups were found, pointing at a

very different processing of odor cues in infants.

CLINICAL RELEVANCE/APPLICATION

if we know where there is a failure in connectivity in obese patients maybe we can influence this area trying to avoid the problem of obesity development before it appears to the emotional processing or the memory functions of this area. These two findings clearly indicated different mechanisms of interpretation of these stimuli between

FIGURE (OPTIONAL)

http://abstract.rsna.org/uploads/2015/15007823/15007823_tufe.jpg

DISCLOSURES

1.) Pilar Dies-Suarez, MD (*Presenter*) Nothing to Disclose

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