

Adenovirus 36 seropositivity in 760 children in the UAE: association with overweight and altered body composition

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Adenovirus-36 (Adv36) causes obesity in animals and is associated with human obesity. Previous paediatric populations studied have shown an average infection prevalence of 26%. There is a high prevalence of obesity and diabetes in the Middle East, but there are no data on Adv36 in this population.

We assessed the link of Adv36 with diabetes and obesity among children attending a large Diabetes Centre in Abu Dhabi, UAE. Body composition analysis was done using Tanita Sealing Bioimpedance analyser. Phenotypic, biochemical and haematological data was extracted from patient's medical records. Patients were grouped according to their body mass index (BMI) percentile and glucose tolerance status. Overweight was defined as BMI $\geq$ 85th centile for age. Adv36 serostatus was assessed by ELISA (Obetech, USA). Statistical analysis was performed using SPSS20.0.

760 children (age: 11.8 ± 3.2 years; 67% female, 33% male) were recruited. Overall, the prevalence of Adv36 seropositivity was 45% and was higher in females (51%) compared to males (39%) and among T1DM patients (50%). ADV 36 seropositive patients were significantly older (age 12.5 ± 3.0 v 11.2 ± 3.2 years, $p < 0.0001$) and heavier (weight 50.2 ± 20.2 v 46.3 ± 23.4 kg, $p < 0.013$) compared to seronegative patients. However, there was no significant difference in BMI ($P = 0.38$) or BMI percentile ($P = 0.27$) between the two groups. ADV 36 positive patients had a higher fat free mass (FFM) than seronegative patients (35.7 ± 10.1 v 32.7 ± 12.3 kg, $p < 0.003$). There was, however, no difference in fat mass (FM) between the two groups ($P = 0.39$). Underweight and normal weight seropositive normoglycaemic patients had a higher FFM & FM compared to seronegative patients of the same categories.

Our data indicate a higher rate of adenovirus 36 seropositivity in UAE children compared to other areas. Moreover, we have, for the first time shown an association with altered body composition. These data can have potentially important implications in view of the high prevalence of obesity in the Middle East in general.