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ORIGINAL

Anthropometric survey on children with Down syndrome

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KEYWORDS

Down syndrome;
Length;
Height;
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Cranial perimeter

Abstract

Objective: Study of anthropometric values in the medical records of a representative group of paediatric patients with Down syndrome, from the Down syndrome Unit of the Paediatric Department of Valencia's *Hospital Clínico Universitario*, from 2000 to 2014.

Patients and methods: Descriptive observational study in a group of 140 patients between 1 and 13 years. The group was configured based on the inclusion and exclusion criteria. We extracted data about birth from their first visit, and subsequently patient data at the time of each visit (643 measurements).

Results: 103 patients with regular trisomy of Down syndrome were recorded and studied. There were 59 (57%) boys and 44 (43%) girls. The records were then analysed and percentiles were calculated.

Discussion: The median was compared to that of percentiles from the Catalan Down Syndrome Foundation.

Conclusions: We present an observational study with anthropometric measurements of a group of Down syndrome children from Valencia. Measurements were lower than those of the WHO for the general population, but similar to those recorded by the Catalan Down Syndrome Foundation. The need to continue using customised Down syndrome percentiles is reaffirmed, with periodic review of these tables.

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PALABRAS CLAVE

Síndrome de Down;
Longitud;
Talla;
Peso;
Perímetro craneal

Estudio antropométrico en una población infantil con síndrome de Down

Resumen

Objetivo: Estudio de los valores antropométricos registrados en las historias clínicas de un grupo representativo de pacientes en edad pediátrica en la Unidad de Síndrome de Down del Servicio de Pediatría del Hospital Clínico Universitario de Valencia, entre los años 2000 y 2014, inclusive. **Pacientes y métodos:** Estudio observacional descriptivo en una muestra de 140 pacientes de entre 1 y 13 años. La muestra se configuró a partir de los criterios de inclusión y de exclusión. Se extrajeron del informe de la primera visita, los datos relevantes referentes al nacimiento y, de las visitas sucesivas (643 mediciones), el estado del paciente en dicho momento.

Resultados: Se estudiaron 103 pacientes con síndrome de Down portadores de trisomía regular, que superaron los criterios de inclusión y exclusión, cuya distribución por sexos corresponde a 59 (57%) niños y 44 (43%) niñas. Posteriormente, se analizaron, obteniendo percentiles.

Discusión: Se comparó la mediana con aquella de los percentiles propuestos por la Fundación Catalana Síndrome de Down.

Conclusiones: Presentamos un estudio observacional con las mediciones antropométricas de una muestra de pacientes menores con síndrome de Down de la población valenciana.

Las medidas han sido inferiores a las de la población general, pero similares a las de los pacientes del estudio de la Fundación Catalana Síndrome de Down. Se reafirma la necesidad de continuar empleando unas tablas percentiladas propias para la población con síndrome de Down, siendo necesaria una revisión periódica de dichas tablas.

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Introduction

Over time height and weight studies have been made for the general population using graphs that can help us to assess children's growth.¹ As a result many diseases are diagnosed, and anticipated in time. Classification in percentiles has also helped to objectively compare the patient with other children of the same age. Although this classification is actually artificial, it can be very useful on occasions. Progressive percentile reduction may become one of the earliest indicators of an illness which affects the patient's growth. One health trait of a boy or a girl is that their anthropometric measurements match their age according to their gender.

The percentile graphs used in paediatric clinics in Spain are those proposed by the WHO for the European population. They appear on healthcare posters of the majority of the autonomous communities.^{2,3}

For children with Down syndrome the American Association⁴ tables are used, which are far removed from the Spanish population,⁵ and also those from the Catalan Down Syndrome Foundation from 2003/2010.

For many years it has been observed, but not registered, that there are increasingly higher percentiles in boys and girls who attend the Down Syndrome Unit of Valencia's *Hospital Clínico Universitario*. This suggests that the tables used up until then did not correspond with the actual reality of Down syndrome children and it was therefore necessary to revise the standard anthropometric data for these children. Our contribution is sustained and valuable because to our knowledge there is no mention of any study in the literature which updates anthropometric data of Spanish patients with Down syndrome during the last decade, except the

above-mentioned one from the Catalan Down's Syndrome Foundation.

There was a need to accurately determine anthropometric data (weight, height, cranial perimeter) of children with Down syndrome in Valencia. It was also of interest to compare the said measurements with values observed in previous studies.

Patients and methods

Sample selection

The medical records of patients with Down syndrome who were attended at the Down Syndrome clinic of Valencia's *Hospital Clínico Universitario*. The records of children born with Down syndrome between 2000 and 2013 were analysed and a prospective follow-up of these patients was made, to which they voluntarily agreed, throughout their visits to the Down Syndrome Unit of Valencia's *Hospital Clínico Universitario*.

The initial sample was a total of 140 patients.

Exclusion criteria

- Prematurity with gestational age of 34 weeks or less.
- Trisomy mosaicism and translocation.
- Serious pathology, with heart disease or digestive disorders, which interfered with growth.
- Exitus.

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