Serum immunoglobulin D levels by age in a healthy Italian pediatric population

Sirs,

Limited studies are currently available regarding IgD serum levels in healthy subjects and results are contrasting. In adults, considerable variations in IgD serum levels have been reported from undetectable to over 60 IU/mL (1, 2). The shape of the distribution has been variously described as unimodal, bimodal or trimodal (2). Gender, human leukocyte antigens DR1 haplotype, Gm allotype, and environmental factors, such as smoking, may influence serum IgD level (2). Few investigations have been conducted in children and results may be difficult to interpret since several studies included exclusively children with an underlying disease (*i.e*. atopy, celiac disease, or congenital immunodeficiency) (3-6). A linear increase of IgD level with age (7), or a bimodal distribution (8). have been reported in children. No study has included southern European children. Such data may be of interest, since differences in circulating IgD concentrations have been found between adult volunteers of different ethnic backgrounds (9). Thus, we determined serum IgD concentrations among healthy Italian children, using a highly sensitive, commercially available, radio immunodiffusion method (RID). IgD serum levels were determined in 208 healthy Italian children aged 0 to 18 years undergoing venopuncture before a minor surgical elective intervention. Informed consent to the study was obtained by the parents or legal guardians. The study received local Ethical Committee approval. Serum samples were stored at -70°C until tested. Serum IgD concentrations were determined using a commercial RID assay according to the manufacturer's instructions. (Human IgD NL BINDARID kit. Binding Site Inc., Birminghan, U.K.). The lower serum concentration of IgD quantifiable was 0.5 IU/mL.

Children were subdivided according to age class, and serum IgD concentration percentiles for each age class were calculated. Median IgD serum concentration progressively increased with age (Table I). In contrast to previous data (8), we did not observe a bimodal distribution of IgD values over age, while IgD serum level appeared to be directly related to age (r=0.36; $p<0.0001$, by linear regression analysis).

Two children (6.5%) aged ≥2years displayed IgD serum level ≤2.0 IU/mL. Accordingly, other authors found very low IgD serum levels in a minor proportion of adults and suggested that the condition of low producer may be genetically determined, not age-related, with no associated clinical manifestation (2).

Some previous studies suggested that levels of circulating IgD differ throughout life, with low levels of IgD in infants, rising during childhood until early adulthood, and then declining with age thereafter (2). Different results have been reported by Haraldsson and colleagues who conducted a cross-sectional study, investigating IgD serum levels in about 180 healthy children of Scandinavian origin, using an ELISA assay (8). They reported a gradual increase in IgD concentration until 10 years, and a subsequent decrease with age (8). Such a bimodal distribution of IgD concentration with age was not observed in our study. This discrepancy might be due to differences in laboratory methods, or genetic differences between the two study populations. In both studies a large variance was evidenced considering children aged 15 years and older, similarly to those reported in other studies on adult populations (2).

A limit of our work is its cross-sectional design which does not allow the investigation of possible IgD concentration variability over the time within the same child. However, our data could be helpful to establish age-matched IgD serum levels in children.

Table I. IgD serum concentration percentiles, according to age class, in 208 healthy Italian children.

Age class (years)	Children (n)	Percentage (%)	Percentiles of IgD serum concentration (IU/mL)				
			5°	25°	50°	75°	95°
0-1	23	11.06	1.2	1.6	3.3	5.2	8.9
2-4	47	22.60	1.7	3.2	5.2	8.4	31.9
5-9	46	22.11	1.1	3.3	5.4	8.6	32.7
10-14	66	31.73	2.6	5.8	14.8	27.3	47.5
15-18	26	12.5	1.3	3.0	19.1	47.8	185.2

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