

## Serum Vitamin D Levels of Children with Vernal Keratoconjunctivitis and Normal in Kinshasa

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### ABSTRACT

**Background:** Data on the serum vitamin D3 levels of vernal keratoconjunctivitis (VKC) children are not known well in Central Africa. The children with vernal keratoconjunctivitis are less exposed to sunlight. There is no study that shows the breadth of the serum vitamin D3 levels of vernal keratoconjunctivitis children and normal in our setting.

**Purpose:** This study aimed to compare the serum 25-hydroxyvitamin D [25(OH) D3] levels of children with and without VKC.

**Methods:** An observational, case-control study was performed from September 2019 to February 2020 in the Ophthalmology Department and the Clinical Biology Department of University Hospital of Kinshasa. The case group was recruited consecutively in the consultation while the control group was enrolled in the nearest Rehoboth school complex using a systematic sample method (k=4) on the presence register. Both cases and controls underwent the routine ophthalmological examination of the anterior segment and serum vitamin D3 levels were measured in both cases and controls using Mindray Chemic-Luminescence (CL)-1200i. Data was entered in Microsoft Sheets and analyzed using SPSS version 20.0. The Mann-Whitney -U test (M-U), t-Student test was used respectively to compare the mean serum vitamin D3 levels in the both cases and controls. The correlation of Spearman (rho) was used to determine the association between Body Mass Index and serum vitamin D3 levels in the case group.

**Results:** A total of 75 children with VKC (mean age  $7.8 \pm 4.4$  years) and 75 children without VKC non-atopic control group (mean age  $7.9 \pm 4.3$  years) were enrolled in this study. The vitamin D3 deficiency was more frequent among the case group than the control group (40% vs 8%,  $p=0.0001$ ). Vitamin D3 insufficiency was more frequent in the case group than the control group (33.3% vs 18.6%,  $p=0.04$ ). The mean serum vitamin 25 (OH) D3 levels was statistically lower in children with VKC compared to those without ( $25.5 \pm 8.7$  ng/ml and  $44.3 \pm 18.5$  ng/ml,  $p=0.0001$ ). Time spent outdoors during daylight by children with VKC was statistically lower than children without VKC ( $1.59 \pm 0.71$  hours and  $2.28 \pm 1.08$  hours, respectively) ( $p = 0.0001$ ). Body Mass Index and serum vitamin D3 levels in VKC children showed negative correlation statistically significant (Spearman,  $\rho = -0.452$ ,  $p = 0.0001$ ).

**Conclusion:** This study showed statistically values of serum vitamin D3 levels in VKC children lower than children without VKC.

**Keywords:** Serum 25 (OH) D3, Time spent outdoors, Vernal keratoconjunctivitis, Body mass index

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