

THE PREVALENCE OF GENU VARUM IN PRIMARY SCHOOL CHILDREN IN PORT HARCOURT, NIGERIA

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Received: 02-02-10

Accepted: 05-03-10

ABSTRACT

The aim of this study was to determine the prevalence of genu varum (bow legs) in primary school children in Port Harcourt. Eight hundred children (400 boys and 400 girls) aged between 6 – 10 years were selected by random sampling from some selected primary schools in the Port Harcourt metropolis. For evaluation of genu varum (GVR), intercondylar distance was measured; those that had musculoskeletal system disorder were eliminated from the study. The prevalence of GVR was 4.6%. It was observed that GVR was 3 times more in boys (3.5%) than in girls (1.1%), this difference was also significant ($P < 0.05$). There was also a decline in the prevalence of GVR in older children. Differentiation of pathologic GVR from physiologic condition is important in normal growth of children and corrective surgery undertaken where necessary.

Key words: Genu Varum, angle deformities, prevalence, children, surgery.

INTRODUCTION

Lower extremity bowing also known as Genu Varum (GVR) is a normal physiological process that commonly occurs in walking children under the age of 2 years (Do 2001, Cheema et al., 2003). Maximal bowing is observed in children at age 6 months and this bowing is gradually resolved to neutral knee angle (0 degree) by age 18 months (Heath and Stahili 1993, Green, 1994). Manifestation of greater angle after this age would need further evaluation to differentiate between pathologic GVR caused by Tibia Vara, Achondroplasia, Blount's disease, Osteogenesis Imperfecta etc (Cheema et al., 2003) and nutritional rickets (Pettifor, 2004) from physiologic GVR.

The mean Tibiofemoral angle has been variously put at 5, 6 degrees (Salenius and Vankka, 1975) and 5 degrees by Cahuzac et al. (1995). A slightly lower value of 2.5 degrees was reported by Heath and Stahili (1993) who worked on Caucasian children from age 6 months to 11 years.

Angular deformities of the knee were found to be more common amongst the urban dwellers than rural dwellers (Agaja, 2001). The use of the intercondylar distance to determine genu varum in the African population was first done by Omololu et al. (2003) in children between ages 1 – 10 years. Their work concluded that intercondylar distance up to 0.2cm was normal physiological bow legs in children up to ten years old while values above 0.2cm were pathological.

A proper evaluation and recognition of these pathologic conditions by determination of knee angles and intercondylar distance is important for accessing GVR that will resolve spontaneously and GVR that would need medical treatment or surgical intervention.

The aim of this study therefore was to determine the prevalence of GVR in children in this age group (6 years to 10 years in primary schools) and to find out if indeed there is a reduction in prevalence compared to earlier studies.

MATERIALS AND METHODS

Eight hundred (800) primary school children aged between 6 – 10 years were used for this study (four hundred for each sex). They were randomly selected from primary schools within the Port Harcourt metropolis. Children with a history of musculo-skeletal disorders and those with obvious trauma to the lower limbs were excluded from the sampled population.

The intercondylar distance was measured with a measuring tape as described by Heath and Stahili

(1993). Children with intercondylar distance greater than 0.2cm (i.e physiological intercondylar distance for Nigerian children) were considered to exhibit GVR and the relevant data was collected.

Statistical tool used included frequency distribution, percentages and test of significance to determine if the male and female values were significantly different ($p < 0.05$) or not significant thereby accepting null hypothesis, the null hypothesis was rejected at $p = 0.05$.

RESULTS

From the total number of 800 children, 763 were normal, while 37 of them comprising 28 boys and 9 girls had genu varum with recordable intercondylar distances.

This gives the prevalence of GVR of the total population as 4% for the boys (3.5%) and (1.1%) for the girls giving a ratio of 3:1. This difference was statistically significant ($p < 0.05$). There was a decline in the frequency of GVR age advantage in both sexes as seen in the Table below. 98.6% of the GVR cases were bilateral while only 1.4% was unilateral.

Table1: Showing distribution of GVR versus age in the sample population

Age	Frequency	GVR frequency
6	160	10
7	160	10
8	160	7
9	160	6
10	160	4
Total	800	37

DISCUSSION

This present study was carried out to document the prevalence of GVR among only primary school children from age 6 in Nigeria using Port Harcourt as a case study. From the data, it was observed that the occurrence rate of GVR was 4.6% which is a lower value compared to value

seen in Iranian children of the same age range. (Karimi-Mabarake et al., 2005) who got a value of 7.9%. GVR was also observed to occur 3 times more in boys than girls in the present study in contrast to 2:1 ratio seen in the Iranian children. On the site of occurrence, it was observed that GVR occurred 98.6% bilaterally and 1.4%

unilaterally, this is also in agreement with other studies that had found out bilateral angular deformities as more common (Omololu et al., 2003; Arazi et al., 2001; Udoaka et al., 2008).

The prevalence of genu varum in the age ranging from 6 years to 10 years was 4.6% (3.5% for boys and 1.1% for girls). When this was compared to the study done on nursery and primary school children by Udoaka et al. (2008) with age ranging from 2 years to 10 years, showed a significant decline as their value was 33%. This is in keeping with the fact that as the child grows older, there should be a decline in the angulature of the knees tending towards normal alignment. The higher prevalence in males is also in keeping with the study of Cahuzac et al. (1995) and Udoaka et al. (2008).

CONCLUSION

Genu Varum has been found to be on the decline in the older children; however, persistent cases can be corrected by partial epiphysiodesis during adolescence (Brown et al., 1992).

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