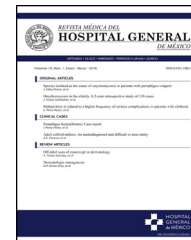




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ORIGINAL ARTICLE

Sleep architecture in children with arousal disorders

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KEYWORDS

Parasomnia;
Children;
Sleep

Abstract

Introduction: Arousal disorders (AD) are sleep disorders that primarily involve behaviour typical of being awake (e.g. talking, walking, handling objects, yelling or crying). They present during partial arousal typically during slow wave sleep (SWS). By definition it has been suggested that parasomnias do not cause changes in sleep architecture or insomnia symptoms or daytime drowsiness.

Method: A comparative and retrospective study was conducted to study the sleep architecture of a group of paediatric patients with clinical and polysomnographic diagnosis of arousal disorders (ADG), paired by age and gender with a group of healthy children (HCG). The research was conducted at the Sleep Disorders Clinic of the Faculty of Medicine of the Universidad Nacional Autónoma de México. The Student's *t* test for independent samples was used to compare sleep architecture and a value of $p < 0.05$ was used to determine significance.

Results: There was a significant increase in rapid eye movement sleep (REM) and REM sleep latency and a significant reduction in light sleep (stages N1 and N2) in the ADG compared to the (HCG).

Conclusions: It has been reported that AD first manifests during the pre-school years and that the frequency of events gradually decreases and abate completely during adolescence, which is why AD is believed to be the manifestation of an immature central nervous system (CNS). It may be that the sleep architecture characteristics shown by patients in the ADG would correspond to CNS immaturity in healthy but younger children.

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PALABRAS CLAVE

Parasomnias;
Niños;
Sueño

Arquitectura de sueño en niños con parasomnias de activación

Resumen

Introducción: Las Parasomnias de Activación (PA) son trastornos del dormir que principalmente consisten en la presencia de conducta propia de la vigilia (por ejemplo hablar, caminar, manipular objetos, gritar o llorar) durante despertares parciales observados dentro del sueño de ondas lentas (SOL). Por definición se ha planteado que las parasomnias no provocan cambios en la arquitectura del sueño ni síntomas de insomnio o somnolencia diurna.

Método: Es un estudio retrospectivo y comparativo, el objetivo fue estudiar la arquitectura del sueño de un grupo de pacientes pediátricos con diagnóstico clínico y polisomnográfico de parasomnias de activación (GPA), pareados por edad y sexo con un grupo de niños sanos (GNS). La investigación se llevó a cabo en la Clínica de Trastornos del Sueño de la Facultad de Medicina, de la Universidad Nacional Autónoma de México. La comparación de la arquitectura del sueño se hizo con la prueba t de Student para muestras independientes y se usó un valor de $p < 0.05$ para determinar la significancia.

Resultados: Respecto al GNS, en el GPA se observó un incremento significativo del sueño de movimientos oculares rápidos (SMOR) y de la latencia al sueño MOR; junto con una disminución significativa del sueño ligero (fases N1y N2).

Conclusiones: Se ha descrito que la edad de inicio de las PA corresponde con la etapa preescolar y que la frecuencia de los eventos disminuye gradualmente hasta que remiten durante la adolescencia; por lo que se ha planteado que las PA podrían ser manifestaciones de un sistema nervioso central (SNC) inmaduro. Posiblemente las características en la arquitectura del sueño en el GPA, pueden corresponder a una inmadurez del sistema nervioso central en niños sanos, pero de menor edad.

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Introduction

Parasomnias are defined as sleep disorders that present during slow wave sleep (SWS) or rapid eye movement sleep (REMS), or during arousal from sleep or while falling asleep.¹ They are characterised by behaviours (such as sleepwalking), physiological events (e.g., sleep wetting) or emotions (such as nightmares) and are closely related to the stages of sleep.²

The pathophysiology remains unknown, but they have been reported as a benign disorder in which there may be a CNS immaturity process; the CNS regulates the normal process of waking up from non-REM sleep.³

Parasomnias are currently divided into four groups: arousal disorders (AD), sleep-wake transition disorders, REM sleep parasomnias and other parasomnias.⁴

The prevalence of AD ranges from 3% to 4%, the age of onset is during childhood and most cases subside during adolescence.⁵

AD are partial arousals that present during SWS and therefore occur during the first half of the night.⁶ Some triggering factors have been reported, including fever,⁷ sleep deprivation and consumption of drugs, alcohol, sedatives, hypnotics⁸ and antihistamines, among others.⁹

There are three types of AD: confusional arousals, sleepwalking and sleep terrors. Even though it has been reported that there are no alterations in the macro-architecture of sleep in patients with these diagnoses,^{10,11} other studies have described alterations during the first sleep cycle

such as low voltage EEG (electroencephalography) and electroencephalographic arousals (EA) with no behavioural correlation.¹²

It has also been reported that paediatric patients with AD present symptoms of insomnia such as resistance to go to bed, increased sleep onset latency and night-time arousals together with a decrease in the length of sleep¹³; in addition to behaviour and mood problems, learning difficulties, cognitive impairment, growth deficit and developmental deficit.¹⁴⁻¹⁶

Furthermore, comorbid sleep disorders may be triggering factors for AD; for example, the presence of periodic limb movement disorder or obstructive sleep apnea has been reported in paediatric patients with arousal disorders.¹⁷⁻¹⁹

Additionally, it has been published that the arousals occur primarily during SWS, which causes a reduction in sleep quality.^{20,21}

As there are no conclusive data in the literature regarding the possible alterations in the sleep architecture of patients with AD, this study compared a group of children with AD (ADG) with a group of healthy children (HCG) to identify differences in sleep architecture (SA) between the groups.

Method

This was a retrospective, cross-sectional, observational comparative study.

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