

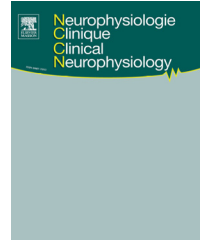


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ORIGINAL ARTICLE/ARTICLE ORIGINAL

The feasibility of home polysomnographic recordings prescribed for sleep-related neurological disorders: A prospective observational study



La faisabilité des enregistrements polysomnographiques à domicile prescrits dans les troubles neurologiques du sommeil : une étude observationnelle prospective

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Received 18 October 2013; accepted 7 August 2014

Available online 23 August 2014

KEYWORDS

Polysomnography;
Home;
Ambulatory;
Sleep disorders;
Neurological disorders

Summary

Objective. – Home polysomnography is being increasingly developed for sleep studies, with various grades of quality. This study aimed to determine the feasibility of affordable, high quality home polysomnographic recordings prescribed for suspected sleep-related neurological disorders.

Patients and methods. – We prospectively screened all patients referred to the specialist sleep disorders clinic in Nancy University Hospital between May 2011 and August 2011. Patients were eligible for inclusion if they required polysomnography for the diagnosis of a sleep-related neurological disorder. One-night, polysomnography was performed in each patient's home by a trained sleep technician. Financial cost was determined prior to inclusion. A recording was considered as satisfactory if all the following criteria were present: at least, one EEG channel with continuous signal allowing determination of sleep stages and wake during more than 66% of sleep time; at least, one usable respiratory channel (airflow or either band) during more than 66% of sleep time; and usable oximetry during more than 66% of sleep time.

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MOTS CLÉS

Polysomnographie ;
À domicile ;
Ambulatoire ;
Troubles du sommeil ;
Sommeil
neurologique

Results. – Forty-eight of the 139 screened patients were included. Among the 48 home polysomnography recordings, 35 (72.9%) were satisfactory. Thirteen (27.1%) tracings displayed an unsatisfactory loss of EEG data, including seven (14.6%) tracings with an unsatisfactory loss of respiratory data.

Conclusion. – Home polysomnography prescribed for suspected sleep-related neurological disorders is feasible, with affordable costs, whilst maintaining high quality recording. Further studies are needed to measure the real medico-economic impact of promoting outpatient domiciliary explorations for sleep-related neurological disorders.

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Résumé

But de l'étude. – La polysomnographie à domicile se développe actuellement avec des niveaux de qualité variables selon le type de troubles du sommeil étudiés. Cette étude a pour objectif de montrer la faisabilité des enregistrements polysomnographiques à domicile, alliant faible coût et haute qualité, et qui sont nécessaires au diagnostic de troubles neurologiques du sommeil.

Patients et méthodes. – Entre mai 2011 et août 2011, les patients se présentant à la consultation spécialisée du sommeil du Centre hospitalier et universitaire de Nancy ont été évalués. Étaient éligibles les patients nécessitant une polysomnographie pour le diagnostic de troubles neurologiques du sommeil. L'enregistrement polysomnographique nocturne était réalisé à domicile par un technicien spécialisé. Le coût total de l'acte était déterminé avant les inclusions. Un enregistrement était considéré comme satisfaisant si tous les critères suivants étaient réunis : au moins une voie EEG permettant de définir le stade de sommeil sur minimum 66 % du temps total de sommeil, au moins une voie respiratoire (débit ventilatoire ou sangles) sur minimum 66 % du temps total de sommeil, et l'oxymétrie analysable sur minimum 66 % du temps total de sommeil.

Résultats. – Quarante-huit des 139 patients évalués ont été inclus. Sur les 48 enregistrements, 35 (72,9 %) étaient satisfaisants. Treize (27,1 %) enregistrements ont présenté une perte non satisfaisante des signaux EEG, incluant les sept (14,6 %) enregistrements avec une perte non satisfaisante des signaux respiratoires.

Conclusion. – La polysomnographie à domicile prescrite chez les patients suspects de troubles neurologiques du sommeil est donc réalisable. Les coûts sont faibles mais la qualité reste suffisamment haute. Des études complémentaires sont nécessaires pour mesurer l'impact médico-économique réel des explorations du sommeil neurologique à domicile.

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Introduction

Polysomnography (PSG) is an indispensable method for sleep studies. Two types of PSG are currently defined: attended sleep-laboratory PSG and the unattended home PSG [8]. Home PSG (HPSG) is becoming an alternative to sleep-laboratory PSG for the diagnosis of some sleep disorders. It has been used for the assessment of sleep architecture in children with attention deficit hyperactivity disorder [9]. HPSG has been also fully validated for the assessment of suspected obstructive sleep apnea (OSA) in adults [6]. Indeed in OSA, the quality of sleep (sleep efficiency) has shown in a Belgian study to be better with HPSG compared to sleep-laboratory PSG [5].

The main drawback of HPSG compared to sleep-laboratory PSG is the possibility of sensor loss, which can be detected but not self-resolved. To take this drawback into account, international grades of quality of HPSG have been defined for the Sleep Heart Health Study (SHHS) cohort [14]. This cohort prospectively focused on the relationships between sleep disturbances and cardiovascular morbidity,

but not specifically on sleep-related neurological disorders. The grade "good" required at least 5 hours (or 50% of sleep time) of continuous signal for at least one EEG channel, one respiratory channel and oximetry.

The feasibility of HPSG recordings prescribed for sleep-related neurological disorders may be different than for sleep-related breathing disorders, because patients are more likely to move during sleep with a higher probability of sensor loss (e.g. parasomnia or sleep-related movement disorders). Moreover, the needed time of recording is longer, for example, to estimate sleep efficiency in insomnia, or to record late rapid eye movement (REM) phases for REM sleep behavior disorders. However, the feasibility of HPSG recordings prescribed for sleep-related neurological disorders has never been specifically studied.

The aim of this study was to determine the feasibility of affordable HPSG recordings prescribed for sleep-related neurological disorders. We chose to increase the required proportion of continuous signal for the three main channels from 50% (i.e. grade "good") to 66% of sleep time, in order to consider a PSG recording as satisfactory.

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