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CLINICAL INFORMATION

Psychogenic non-epileptic seizures in the post-anesthesia recovery unit

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Abstract
Introduction: Psychogenic non-epileptic seizures (PNES or ''pseudoseizures'') remain an obscure topic in the peri-operative setting. They are sudden and time-limited motor and cognitive disturbances, which mimic epileptic seizures, but are psychogenically mediated. Pseudoseizures occur more frequently than epilepsy in the peri-operative setting. Early diagnosis and management may prevent iatrogenic injury.
Case: 48 year-old female with a history of depression and ''seizures'' presented for gynecologic surgery. She described her seizure history as ''controlled'' without anticonvulsant therapy. The patient underwent uneventful general anesthesia and recovered neurologically intact. During the first two postoperative hours, the patient experienced 3 episodes of seizure-like activity with generalized shaking of extremities and pelvic thrusting; her eyes were firmly closed. No tongue biting or incontinence was noted. The episodes lasted approximately 3 min each, one of which resolved spontaneously and the other two following intravenous lorazepam. During these episodes, the patient had stable hemodynamics and adequate ventilation such that endotracheal intubation was deemed unwarranted. Post-ictally, the patient was neurologically intact. Computed axial tomography of the head, metabolic assay, and electroencephalogram showed no abnormalities. A presumptive diagnosis of PNES was made.
Discussion: Psychogenic non-epileptic seizures mimic shivering, and should be considered early in the differential diagnosis of postoperative shaking, as they may be more likely than epilepsy in this setting. Pseudoseizure patterns include asynchronous convulsive episodes lasting more than 90 s, forced eye closure with resistance to opening, and retained pupillary responses. Autonomic manifestations such as tachycardia, cyanosis and incontinence are usually absent.

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A psychiatric background is common. Knowledge and correct diagnosis of pseudoseizures is of great importance for anesthesiologists to prevent morbidity and iatrogenic injury such as respiratory arrest caused by anticonvulsant therapy, in addition to the risks associated with endotracheal intubation and prolonged hospital stays. The diagnosis of pseudoseizures must be thoroughly documented and relayed in transfer of care to avoid misdiagnosis and iatrogenic complications. Treatment recommendations are anecdotal; psychiatric interventions are the hallmark of treatment. Anesthetic recommendations include techniques involving the minimum required short-acting agents, along with high levels of peri-operative psychological support and reassurance.
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PALAVRAS-CHAVE
Convulsões;
Sintomas Comportamentais;
Período de Recuperação da Anestesia;
Complicações Pós-Operatórias

Convulsões não epilépticas psicogênicas em sala de recuperação pós-anestésica

Resumo
Introdução: As convulsões não epilépticas psicogênicas (CNEP ou ''pseudoconvulsões'') permanecem como tema obscuro no cenário perioperatório. Trata-se de distúrbios motores e cognitivos súbitos, mas por tempo limitado, que imitam as convulsões epilépticas, mas que são psicogenicamente mediados. Pseudoconvulsões ocorrem com mais frequência que epilepsia em cenário perioperatório. O diagnóstico e tratamento precoces podem evitar lesões iatrogênicas.
Caso: Paciente do sexo feminino, 48 anos de idade, com história de depressão e ''convulsões'', apresentou-se para cirurgia ginecológica. A paciente descreveu sua história de convulsões ''controladas'' sem o uso de terapia anticonvulsivante. A paciente foi submetida à anestesia geral sem intercorrências e recuperou-se neurologicamente intacta. Durante as duas primeiras horas de pós-operatório, a paciente apresentou três episódios semelhantes à convulsão, com tremores generalizados das extremidades e impulso pélvico; seus olhos estavam bem fechados. Não observamos mordedura da língua ou incontinência. Os episódios duraram cerca de 3 min cada; um dos episódios resolveu espontaneamente e os outros dois após a administração de lorazepam por via intravenosa. Durante os episódios, a condição hemodinâmica da paciente era estável e a ventilação adequada, de modo que a intubação traqueal foi considerada injustificável. Após a convulsão, a paciente estava neurologicamente intacta. Tomografia axial da cabeça, teste metabólico e eletroencefalograma não mostraram alterações. O diagnóstico de provável CNEP foi feito.
Discussão: As convulsões não epilépticas psicogênicas imitam o tremor e devem ser inicialmente consideradas no diagnóstico diferencial de tremor pós-operatório, pois podem ser mais prováveis que a epilepsia nesse cenário. Os padrões da pseudoconvulsão incluem episódios convulsivos assíncronos que duram mais de 90 s, olhos forçadamente fechados com resistência à abertura e respostas pupilares mantidas. Manifestações autonômicas, como taquicardia, cianose e incontinência, normalmente estão ausentes. Uma história psiquiátrica é comum. O conhecimento e o diagnóstico correto de pseudoconvulsões são muito importantes para os anestesiologistas para a prevenção de morbidade e lesões iatrogênicas, como a parada respiratória causada por terapia anticonvulsivante, além dos riscos associados à intubação orotraqueal e internação prolongada. O diagnóstico de pseudoconvulsões deve ser cuidadosamente documentado e retransmitido nas trocas de equipes médicas para evitar erros de diagnóstico e complicações iatrogênicas. As recomendações de tratamento são anedóticas; intervenções psiquiátricas são o pilar do tratamento. As recomendações anestésicas incluem técnicas que envolvem o uso de agentes de ação curta, juntamente com altos níveis de apoio e amparo psicológico no período perioperatório.
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Introduction

Psychogenic non-epileptic seizures (PNES), also known as pseudoseizures, are a well-known entity in the neurological literature; however, they remain an obscure topic in the peri-operative setting. PNES are sudden and time-limited disturbances of motor, cognitive, and/or emotional functions, which mimic epileptic seizures. Unlike epileptic seizures, PNES are not associated with organic or physiologic central nervous system dysfunction but are rather

psychogenically mediated.[1,2] They should be considered early in the differential diagnosis of postoperative shaking, as postoperative seizures are rare events[3,4]; this makes PNES more likely than epilepsy in this setting.[3] Early diagnosis and management may prevent morbidity from inappropriate treatment and resource misuse in these patients.

We present a case of seizure activity in the post-anesthesia care unit (PACU) diagnosed subsequently as PNES.

Case report

A 48 year-old female with a past medical history significant for urinary incontinence, depression, chronic migraines, asthma, kidney cancer (s/p nephrectomy) and a remote history of ''seizures'' presented for a urinary sling implantation procedure. On further questioning, the patient described her seizure history as ''resolved'' and not warranting anticonvulsant therapy; the last episode was more than 3 years before. The patient underwent uneventful general anesthesia that was induced with propofol, fentanyl and midazolam (as premedication) and was maintained with sevoflurane. An uneventful surgery was followed by successful emergence and tracheal extubation, after which the patient was transferred to the PACU without complications and neurologically intact.

During the subsequent 2 h in the PACU, the patient experienced 3 episodes of seizure-like activity. These spells started as generalized shaking of all extremities, the patient's head and pelvic thrusting, with eyes firmly closed. No tongue biting and/or bowel or bladder incontinence was noted. The episodes lasted approximately 3 min each, one of which resolved spontaneously and the other two after the administration of 2 mg of intravenous lorazepam. During the entire PACU stay, the patient had stable hemodynamics and adequate ventilation/oxygenation such that endotracheal intubation was deemed unwarranted. Post-ictally, the patient's neurologic status improved slowly and returned to baseline. A neurologist was consulted, who recommended computed axial tomography of the head, metabolic assay, and electroencephalogram (EEG); all tests were negative and showed no abnormalities. A thorough chart review of the patient revealed prior EEG testing with normal brainwave activity in the setting of 4 ''seizure spells.'' The patient had also been worked-up in the past for transient neurologic deficits of unknown etiology, suggesting somatoform disorder. After discussion with the neurology team as well as the patient's own neurologist, the diagnosis of PNES was made. The remainder of the patient's hospital course was uneventful and she was discharged home the following day.

Discussion

Generalized shaking in the post-operative period is most commonly due to shivering, and may or may not be thermoregulatory in origin.[5] Non-thermoregulatory shivering is thought to be secondary to the effects of volatile anesthetics, pain or both.[6] Postoperative seizures are rare events and thus are an infrequent cause of generalized post-operative shaking. When they do occur, they are generally attributable to an identifiable drug reaction, metabolic disorder, or neurological event, having the highest incidence in the neurosurgical population.[3]

PNES (also referred to as ''pseudoseizures'') mimic shivering, and they should be considered early in the differential diagnosis of postoperative shaking, as they may be more likely to occur than epilepsy in the postoperative setting.[3] First described in the PACU by Parry and Hirsch,[7] these attacks resemble grand mal spells but lack abnormal electrical discharges on EEG. The prevalence of PNES has been estimated to be between 2 and 33 per 100,000.[8] In fact, among patients referred to outpatient epilepsy centers, between 5 and 25 percent are likely to have PNES, while 25–40 percent of patients evaluated in inpatient epilepsy monitoring units for intractable seizures are ultimately diagnosed with PNES.[1]

In general, PNES tend to follow certain patterns, which include: extravagant convulsive episodes that last longer than 90 s with asynchronous limb movement, side-to-side head movement, forced eye closure with resistance to eye opening, and retained pupillary responses.[1,3] Autonomic manifestations such as tachycardia, cyanosis and incontinence are usually absent. Recall of events during the ictus, ictal stuttering, vocalizations and lacrimation are relatively uncommon in epileptic seizures, and suggest PNES. A background of psychiatric disorders is common and may include depression, anxiety, somatoform disorder, borderline, narcissistic and histrionic personality disorders, as well as a history of sexual and/or physical abuse.[1] In one study, the occurrence of an episode in the doctor's waiting or examination room was estimated to have a 75 percent predictive value for PNES.[9] The diagnosis of PNES is one of exclusion, and the gold standard diagnostic tool appears to be simultaneous recording of seizures on video tape and EEG recording.[10]

Knowledge of PNES is of great relevance for anesthesiologists to prevent morbidity and iatrogenic injury. One study that followed 13 PNES patients for over 4 years documented eight episodes of respiratory arrest caused by intravenous anticonvulsant therapy administered on the presumptive diagnosis of seizures.[11] Additionally, other morbidity may be encountered from endotracheal intubation and prolonged hospital stays. The diagnosis of PNES must be thoroughly documented and relayed in transfer of care to avoid subsequent complications. Multiple PNES episodes that follow general anesthesia warrant further evaluation and exclusion of other diagnoses. In ambiguous cases, a pre-operative neurological evaluation may well be indicated.

Treatment recommendations for PNES are mostly based upon anecdotal experience or small case series; however, psychiatric interventions are the hallmark of treatment. These should be individualized according to the underlying psychiatric disorder; a common intervention is traditional psychotherapy.[12] Anesthetic recommendations are scarce, but include techniques involving only the minimum required quantities of preferably short-acting agents, along with high levels of peri-operative psychological support, and most importantly, constant reassurance for these patients.[3]

Conflicts of interest

The authors declare no conflicts of interest.

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