

NON-KETOTIC HYPERGLYCEMIA-INDUCED HEMIBALLISMUS IN AN ELDERLY WITH NEW ONSET DIABETES MELLITUS TYPE II

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НЕКЕТОТИЧЕСКИЙ ГЕМИБАЛЛИЗМ, ВЫЗВАННЫЙ ГИПЕРГЛИКЕМИЕЙ, У ПОЖИЛЫХ ЛЮДЕЙ С ПЕРВИЧНО УСТАНОВЛЕННЫМ САХАРНЫМ ДИАБЕТОМ II ТИПА

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Chorea is an irregular, poorly patterned, involuntary movement disorder. Various conditions such as cerebrovascular insufficiency, neurodegenerative diseases, neoplastic diseases, immunological diseases, infectious diseases, and metabolic diseases are known as secondary causes of this rare disorder. Hyperglycemia is the most common metabolic cause of chorea-ballism. NKH chorea is more common in elderly patients especially females from East Asian origin. Proper control of DM, with or without neuroleptic drugs, is the key for treatment. We report a case of 77-year-old elderly male with a 5-day history of involuntary movements of the right upper and lower extremities, diagnosed with Non-ketotic Hyperglycemia-Induced Hemiballismus with New Onset Diabetes Mellitus Type II in emergency department.

Keywords: *chorea, diabetes mellitus, non-ketotic hemiballism.*

Хорея – это нерегулярное непроизвольное двигательное расстройство. Различные состояния, такие как цереброваскулярная недостаточность, нейродегенеративные заболевания, опухолевые заболевания, иммунологические заболевания, инфекционные заболевания и нарушения обмена веществ, известны как вторичные причины этого редкого заболевания. Гипергликемия – наиболее частая метаболическая причина хореи, баллизма. НКГ-хорея чаще встречается у пожилых пациентов, особенно у женщин восточноазиатского происхождения. Правильный контроль СД, в сочетании с нейролептическими препаратами или без них, является ключом к лечению. В данной статье приводится случай 77-летнего мужчины с 5-дневным анамнезом непроизвольных движений правых верхних и нижних конечностей, которому в отделении неотложной помощи был поставлен диагноз «некетотическая гипергликемия» – индуцированного гемибаллизма с началом сахарного диабета II типа.

Ключевые слова: *хорея, сахарный диабет, некетотический гемибаллизм.*

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Introduction

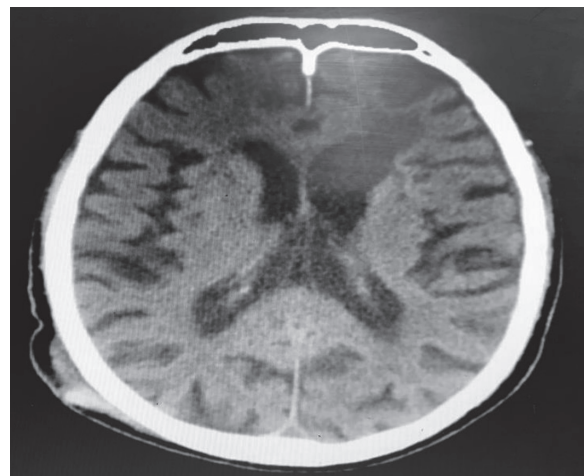
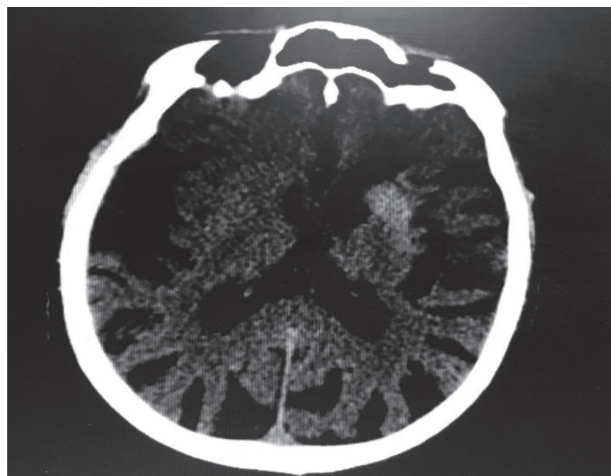
Hemichorea and Hemiballismus can result from a variety of conditions, including cerebrovascular disorders, infections, drugs, metabolic abnormalities, neurodegenerative diseases, immunologic disorders, and tumors, as well as from non-ketotic hyperglycemia in primary diabetes mellitus [3]. Non-ketotic hyperglycaemic is a rare cause of hemichorea-hemiballismus characterized by continuous involuntary movements of an entire limb or of multiple limbs on one side of the body [6, 8]. These movements are irregular, of variable amplitude, and poorly patterned, usually involving the arm and leg together. This is a rare condition with very few published case series till date. The majority of reported cases have involved elderly patients, typically Asian, with a female to male ratio of 1.76 with either new onset diabetes mellitus or with poorly controlled diabetes mellitus.

Case report

An 77 year-old elderly male presented to our emergency department with a 5-day history of involuntary movements of

the right upper and lower extremities. The movements increased with action, decreased with relaxation, and disappeared during sleep. The patient's medical history included Hypertension, Rheumatic Heart Disease s/p Mitral Valve replacement in 1990 and Basal ganglia hematoma resulting in Right hemiparesis in 2008 – recovered completely. No history of parkinsonism or other neurologic disorders was reported. Furthermore, the patient had no prior history of dopamine antagonist use.

On Primary survey, Patient's vitals were within normal limits. GRBS was 406 mg/dl. ECG showed normal sinus rhythm, negative efast scan and screening ECHO showed no new changes. Secondary survey of systemic examination revealed that patient is having right sided Hemiballismus. Routine blood investigation like CBC, RFT, Coagulation Profile, Urine routine, HbA1C, S. Lipid profile and CT scan Brain Plain was advised. CT brain plain showed Hyperdensity involving left caudate head and putamen region classical for Non-Ketotic Hyperglycemic Hemichorea and Hemiballismus.



On follow up of reports, patient had HbA1C of 13.3%, CBC was normal, RFT showed slightly raised S. Creatinine, Urine routine examination showed no ketones. Patient was started on injection Human Actrapid subcutaneously as per sliding GRBS scale. Sugar control within normal limits was achieved over period of 24 hrs which lead to relief of right sided hemiballismus symptoms.

Repeat CT scan brain plain showed disappearance of hyperdensity involving left caudate head and putamen.

Patient was discharged on OHA, Tab Serenase 1 mg BD and Tab Lorazepam 0.5 mg HS in hemodynamically stable condition.

Discussion

Chorea secondary to hyperglycemia was first reported in 1960. Since that time there have been similar cases reported worldwide; most of them are secondary to NKH in type 2 diabetic patients, although rare cases were reported in ketotic hyperglycemic type 1 diabetic patients [1, 2, 3]. The average age of onset is 71 years old, mostly in Asian females, which increases the possibilities of genetic or environmental predisposing factors [7].

Various hypotheses have been proposed to explain the pathophysiology of hyperglycemic chorea, but the exact mechanism is still unknown. Cerebral vascular insufficiency, petechial hemorrhage, hyperviscosity, and depletion of both gamma-aminobutyric acid (GABA) and acetylcholine secondary to metabolic changes have been suggested as possible mechanisms of NKH chorea. Concurrent infection was reported in multiple cases suggesting that this might play as a trigger factor for NKH chorea in predisposed patients [2]. Acute putaminal dysfunction, secondary to hyperglycemic or hyperosmolar insult, associated with some degree of Wallerian degeneration of the internal white matter of the putamen has been also considered to play a pathogenic role in NKH chorea [3].

NKH chorea might be the first presentation of hyperglycemia, or it might be secondary to poorly controlled DM. Some patients developed chorea after rapid correction of hyperglycemia. Moreover, chorea can also occur in hypoglycemia. Typically in patients with NKH chorea, there are high T1- and low T2-weighted signal in the contralateral putamen of the basal ganglia and restricted diffusion in the DWI. CT of the brain may show high density, as seen in our patient but it might fail to show any abnormality in the basal ganglia by the time the MRI can detect it. Moreover, certain cases were reported having NKH chorea with absence of putamen abnormalities on the MRI of the brain [1, 3].

This case report underscores the non-ketotic hyperglycemia-induced hemiballismus syndrome as an unusual presentation of new onset type 2 diabetes mellitus, highlighting that its early recognition and stringent glycemia control associated to the use of neuroleptics hasten the patient recovery.

Conclusion

Overall, the prognosis of NKH chorea has been reported to be excellent, with rare exception [4]. It depends on the prompt identification of undiagnosed diabetes or the proper control of the blood sugar in the previously diagnosed patients. Additionally, typical neuroleptic drugs and sometimes benzodiazepines are useful in the management of choreic movements. A follow-up brain MRI after 6 months usually shows disappearance of the initial findings but they may persist for years.

Hemichorea-Hemiballismus should be regularly included in the differential diagnosis of acute movement disorders, especially in the elder population. Recognition of this unique clinic-radiologic manifestation with its peculiar CT and MR appearance is essential to select the correct therapy and avoid drugs to treat the clinical aspects of this syndrome when it is caused by hyperglycemia. Furthermore, vigilance for this cause of hemichorea-hemiballismus is important, since the movement disorder may be the presentation of potentially dangerous underlying hyperglycemia.

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ИЛК БОРА АНИҚЛАНГАН ҚАНДЛИ ДИАБЕТНИНГ II ТУРИ БЎЛГАН КЕКСА ЁШДАГИ КИШИЛАРДА ГИПЕРГЛИКЕМИЯ ОҚИБАТИДАГИ НОКЕТОТИК ГЕМИБАЛЛИЗМ

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Хорея – ҳаракатларнинг доимий бўлмаган беихтиёр юзага келувчи бузилишлари. Цереброваскуляр етишмовчилик, нейродегенератив касалликлар, ўсма касалликлари, иммунологик, инфекцион касалликлар ва модда алмашинуви каби турли хил патологик ҳолатлар ушбу кам учрайдиган хасталикнинг иккиламчи сабаблари сифатида маълумдир. Гипергликемия – хорея-баллизмнинг энг кўп учрайдиган метабolik сабаби. Нокетотик гемибаллизм кекса ёшдагиларда, айниқса шарқий осиёлик аёлларда кўпроқ учрайди. Қандли диабетни нейролептик дорилар билан ҳамкор равишда ёки бу дориларсиз тўлақонли назорат қилиш даволашнинг калити ҳисобланади. Ушбу мақолада 5 кун давомида кузатилаётган ўнг қўли ва оёғининг беихтиёр ҳаракатланишлари билан шикоят қилиб келган 77 ёшдаги қарияни даволаш натижалари келтирилган. Шошилич тиббий ёрдам бўлимида беморга қандли диабетнинг II тури бошланиши, гипергликемия сабабли нокетотик гемибаллизм ташхиси қўйилди.

Калит сўзлар: хорея, қандли диабет, нокетотик гемибаллизм.

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