

Case Report

ACUTE INFARCT OF THE CORPUS CALLOSUM PRESENTING AS MIXED ALIEN HAND SYNDROME COEXISTING WITH FRONTAL LOBE DYSFUNCTION

*Shanmugasundaram R., Rajagopal M.N. and Binu V.P

Department of General Medicine, VMKV Medical College and Hospital Salem, Tamilnadu

*Author for Correspondence

ABSTRACT

Alien hand syndrome is a complex clinical disorder in which patient presents with various types of involuntary non purposeful movements of limbs. Infarct in corpus callosum is rare because of its rich blood supply. Herewith we report a case of corpus callosum infarct presenting as frequent involuntary reflex grasping of other hand along with motor apraxia of both lower limbs and paratonia. Our case is one of the rare mixed types of alien hand syndrome coexisting with frontal lobe dysfunction.

Keywords: Alien Hand Syndrome, Reflexive Grasping, Corpus Callosal Injury, Mixed Alien Hand Syndrome

INTRODUCTION

Alien hand syndrome is a rare clinical syndrome, characterized by involuntary, uncontrollable and purpose-less movements of one upper limb, and the patient denies ownership of the limb when touching it without visual guidance (Jun *et al.*, 2011). Common causes of Alien hand syndrome include stroke, midline tumors and callosotomy. Presentation of alien hand syndrome is bizarre and can easily be overlooked as functional one or nonspecific (Jun *et al.*, 2011). The condition was originally described by Goldstein (1908) and the term "Alien hand syndrome" was designated by Brion and Jedynak (1972). This syndrome is usually considered as a type of interhemispheric disconnection syndrome resulting from several lesions involving supplementary motor area, corpus callosum, medial frontal cortex, frontal, posterior parietal cortex or thalamus (Jun *et al.*, 2011). In this case report we present an acute infarct of corpus callosum presenting as Alien hand syndrome.

CASES

A 61 year-old right-handed female patient presented to our hospital with sudden onset difficulty in walking and reflexive grasping of palms since 1 day. The patient had 20 year history of type 2 diabetes mellitus and systemic hypertension. On admission higher mental function examination revealed delayed verbal response, motor system examination revealed paratonia on the right hand with normal power of all four limbs and hypoactive deep tendon reflexes. Plantar reflex was flexor response bilaterally. Sensory system revealed normal primary sensory modalities. However patient had sensory extinction i.e. patient fails to recognise the stimuli on the left hand when simultaneously both hands were stimulated. Other cortical sensations were normal. Cerebellar examination was also normal. The reflexive grasping of clothes and reflexive grasping of right hand by left hand followed by difficulty in releasing the hands from grasping were bizarre and frequent on admission. On further questioning patient revealed that her left hand was the one grasping the other hand without her knowledge. No intermanual conflict or involuntary mirror movements (synkinesis) of the hands were present. No other frontal release signs were positive in this patient. Other neurological examinations were within normal limits. Other systems examinations were within normal limits. General examination and vitals were within normal limits except the blood pressure on the higher side which was later controlled by antihypertensives.

Her routine blood results were normal. Her blood sugar was fairly under control with insulin throughout her hospital stay. Her ECG and CXR were normal. NCCT Brain taken on the day of admission was normal. Subsequently done MRI Brain (figure 1) showed acute corpus callosal infarct. EEG was normal which was done to rule out any partial seizure disorder. Patient was started on antiplatelet, statin,

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clonazepam (Haq *et al.*, 2010) and other supportive measures. At the end of first week patients reflex grasping has come down. Patient started walking in the second week. At the end of second week patient was discharged from the hospital.

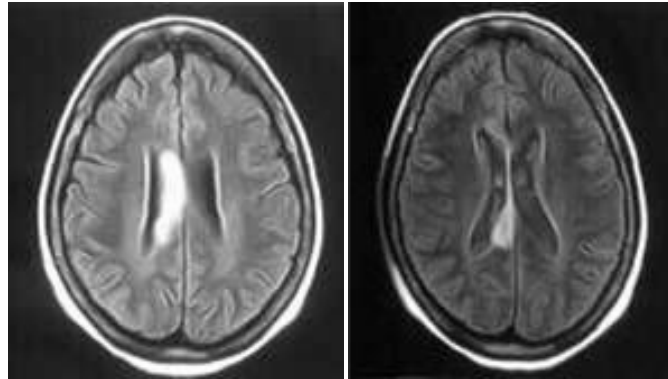


Figure 1: MRI brain T2 weighted image axial view showing corpus callosum infarct

DISCUSSION

Alien hand syndrome is an involuntary motor phenomenon usually not accompanying hemiparesis. It is generally caused by lesion in the corpus callosum and associated supplementary motor or sensory area. (Nicholas *et al.*,). This patient presented with difficulty in walking. Examination revealed normal power, reflex, sensory and coordination. Patient had paratonia which indicates frontal lobe involvement. Patient had difficulty in walking despite normal power and coordination probably indicative of motor apraxia or leg manifestation of an Alien hand syndrome (Chan *et al.*, 1996). We suspected the reflexive grasping as some movement disorder initially, but it was bizarre and not fitting into any of the known neurological condition. In the sensory system primary modalities were intact, only sensory extinction was positive which indicates parietal lobe involvement (Muangpaisan *et al.*, 2005). Since the presentation was acute onset we suspected vascular etiology. We did NCCT brain which was normal. However we did MRI which revealed acute corpus callosal infarct. This patient had corpus callosal infarct and without any significant involvement of other areas (Muangpaisan *et al.*, 2005). The probable artery involved might be pericallosal artery (Suwanwela *et al.*, 2002). Then only we could make the diagnosis of alien hand syndrome due to acute corpus callosal infarct. Corpus callosum connects left and right hemisphere of brain. Corpus callosum has rich blood supply (Jun *et al.*, 2011). Hence infarct is very rare. If infarcts occur it will cause bizarre alien hand syndrome. Various types of alien hand syndrome were reported in literature. Clinico-anatomical correlation is still not clearly established in all previously reported cases (Chan *et al.*, 1999). However corpus callosal lesion is necessary in all cases to label it as Alien hand syndrome. In some cases sensory or posterior type of AHS should be distinguished from frontal and callosal type of AHS (Kato *et al.*, 2003). But ours is a mixed type of alien hand syndrome with frontal (anterior) and parietal (posterior) involvement (Jun *et al.*, 2011).

Conclusion

Infarcts of the corpus callosum are not common, which is most likely due to its rich blood supply from three main arterial systems, specifically the anterior cerebral, anterior communicating, and posterior cerebral arteries (Lin *et al.*, 2011) The isolated infarcts of the anterior cerebral arteries are uncommon, accounting for only 0.6% of all ischemic infarcts (Jun *et al.*, 2011). However if patients present with some bizarre hand movements, not fitting into any of the known neurological condition, we should suspect alien hand syndrome as one of the differential diagnosis.

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