

Chapter 4

A Brief Discussion on Acute Disseminated Encephalomyelitis (ADEM) and Agenesis of the Corpus Callosum (ACC)

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ABSTRACT

The word “cognitive disorder” is assigned to behavioral and personality changes leading to a gradual decline of various cognitive realms which further disturbs the day-to-day social as well as professional activities. Acute disseminated encephalomyelitis (ADEM) and agenesis of the corpus callosum (ACC) are the irreversible and growing brain conditions destroying the memory and thinking ability causing dementia. Though there exists an exponential increase in both the patients, they are well demarcated clinically with various biomarkers. However, the limited efficiency of the available therapeutic agents for treating AD is a spotlight to develop novel drugs. Herein, the chapter deals with the basic information on symptoms, stages, causes, and even treatment methods for ADEM and ACC.

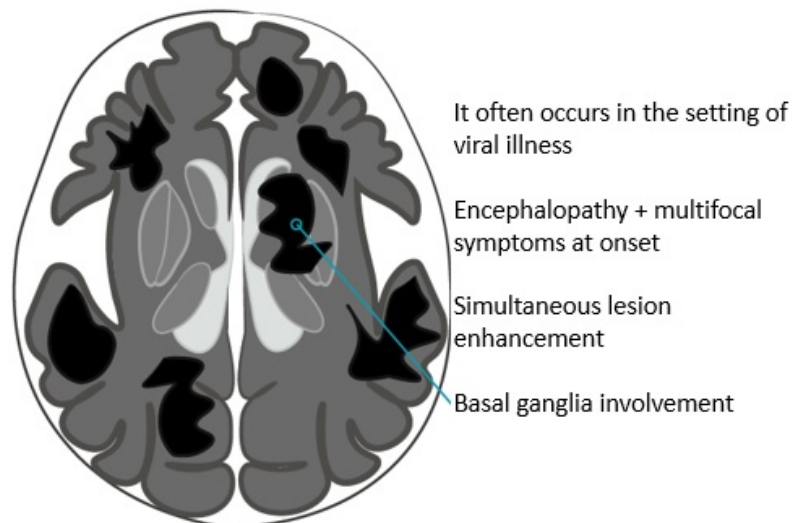
ACUTE DISSEMINATED ENCEPHALOMYELITIS (ADEM)

Acute disseminated encephalomyelitis (ADEM) is considered as a loss or destruction of myelin in nerve tissue disease of the central nervous system (CNS). Most commonly affected are Young and adolescent children (Anil Apak et al., 1999; Anlar et al., 2003; Dale et al., 2000; Hynson et al., 2001; Leake et al., 2004; S. K. Murthy, Faden, Cohen, & Bakshi, 2002). ADEM followed common childhood infections such as measles, smallpox, and chickenpox were associated with significant mortality and morbidity. The estimated incidence is 0.8 per 100 000 populations per year (Leake et al., 2004). Huge numbers of cases among adults and even elderly patients have been reported (Schwarz, Mohr, Knauth, Wildemann, & Storch–Hagenlocher, 2001); however, the incidence may be considerably lower. In contrast with cases of multiple sclerosis (MS), there appears to be no sex preponderance in ADEM (Dale et al., 2000; Leake et al., 2004). 50% to 75% of all cases, the clinical onset of disease is preceded by viral or bacterial infections, mostly nonspecific upper respiratory tract infections (Hynson et al., 2001; Leake et al., 2004; S. K. Murthy et al., 2002). Acute disseminated encephalomyelitis may also develop following a vaccination (post immunization encephalomyelitis). ADEM is a relatively rare disorder, but it is of real concern for several reasons. The reasons are

- (i) Vaccination schedules, particularly for children, have expanded over the past years.
- (ii) ADEM may result in permanent neurological disability appears very early in life.

Vaccination-associated ADEM is most commonly observed after measles, mumps, or rubella vaccinations. It also reported after polio and European tick-borne encephalitis vaccinations (Schattenfroh, 2004; Tenenbaum, Chamoles, & Fejerman, 2002). It is significant that the incidence of a measles vaccination–associated ADEM is about 10 to 20 per 100 000 vaccinated individuals and thus considerably lower than the incidence of ADEM after a wild-type measles encephalitis (100 per 100 000 infected individuals). A number of infectious agents, mainly viruses, have been associated with ADEM. Clinical signs and symptoms of ADEM may show themselves para infectiously or post infectiously.

Figure 1. Representative picture of ADEM



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