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# HERPES SIMPLES VIRUS MENINGOENCEPHALITIS IN A METHAMPHETAMINE USER

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**Abstract: Herpes simplex encephalitis is the most common cause of sporadic encephalitis. There are some reports of reactivation of HSV in mice after administrating of amphetamine. In some people methamphetamine use has been linked with increased numbers of HIV and other STI. We report a young woman methamphetamine user with herpes simplex meningoencephalitis.**

**Keywords:** • Herpes simplex • Encephalitis • Methamphetamine • Amphetamine

## Introduction

Herpes simplex encephalitis (HSE) is the most common cause of sporadic lethal encephalitis, occurring in about one person per 250.000 -500.000 population per year (1). Prevalence of methamphetamine use seems to be increasing in some parts (2). We report a young women methamphetamine user with herpes simplex meningoencephalitis.

### Case history

A 18-year-old woman presented with fever and confusion. The patient developed low grade fever, followed lethargy, inappropriate speech, visual loss, generalized convulsion, bizarre behavior and delirium. There wasn't any past problem except using of inhalatory methamphetamine (glass). On physical examinations, she was in subcoma status, showing febrile signs with stiffness of neck, kernig's and brudzinski's signs. Otherwise her physical examination was normal.Lumbar puncture revealed a normal pressure with pleocytosis. There was 200 WBC with 90% polymorphonuclear, 50 RBC and normal protein and sugar. Gram stain and culture of CSF for bacterial infection was negative but PCR for HSV was positive. Injection Acyclovir was started at a dose of 500 mg at 8 hour interval intravenously and continued for 3 weeks. Sodium valproate was also prescribed too. The EEG showed generalized spike and slow waves. Brain MRI with gadolinium was shown in Fig 1.

The patient came to on the 7th day and her speech improved on the 10th day. Her memory got better 20 day later. During hospitalization, she didn't have any convulsion. Ophthalmologic examination was normal when she was discharged.

## Discussion

Methamphetamine is a central nervous system stimulant with numerous slang names eg: meth, crystal meth, Tina, ice, and glass. It is administrated by various routs such as inhalation, injection, oral intake and anal insertion (3). Methamphetamine is very addictive and it causes the release of large quantities of neuro transmitters, with increase in sexual arousal while reducing inhibitions (2). It has been reported the incidence of sexually transmitted diseases and HIV infection was increased in certain population of methamphetamine users. (4, 5, 6).

In animals, CNS infection of HSV led to a significant decrease in activity of the catecholamingic system and to an alteration (a shifting of the dose response curve to the right) in

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response to amphetamine (7) A research on mice suggests that non fatal CNS herpes infection produces hypo activity(8). Amphetamine- induced reactivation of latent HSV-1 was produced in mice that this procedure involved intraperitoneal administration of amphetamine sulfate (9). Recurrent lesions were appeared approximately 48 to 72 h after amphetamine administration (10).

There are evidences for an association between the use of epidural morphine and spinal intrathecal morphine with reactivation of herpes simplex labialis in an obstetric population (11).

Herpes simplex encephalitis (HSE) is an acute or sub acute illness, causing both general and focal signs of cerebral dysfunction. Although the presence of fever, headache, behavioral changes, confusion, focal neurological findings, and abnormal CSF findings are suggestive of HSE, no pathogonomoic clinical findings reliably distinguish HSE from other neurological disorders with similar presentations (eg, non-HSV encephalitis, brain abscess, and tumor) (12). In children older than 3 months and in adults, HSE is usually localized to the temporal and frontal lobes and is mostly caused by herpes simplex virus type 1 (13,14), PCR analysis of CSF for detection of HSV DNA has virtually replaced brain biopsy for detection of HSV . Viral DNA can be detected in CSF 24 hours after the onset of symptoms and sensitivity (94-98%) and specifity (98-100%) remain positive for at least 5-7 days, even after administration of antiviral drugs(15, 16). The typical MRI finding in HSE is involvement of the temporal lobes, as well as the insular cortex and the angular gyrus (17.18). Although in many cases HSV1 has beem the main case of HSE, there are reports suggesting involvement of brain stem with HSV type 2 in neonate and also in HIV patients (19,20) HSV has been suggested to cause acute disseminated encephalomyelitis (ADEM) (21) and meningoencephalitis (22). Mortality rate is 70% in untreated HSE, with early treatment, 40% of patients recover without significant neurologic deficits. However, despite appropriate diagnosis and therapy, the mortality rate remains at 30% (23). There is considerable morbidity after HSE, with epilepsy being the most common complication (24).

## Conclusion

Although amphetamine induced reactivation of latent HSV-1 following intra-peritoneal administration of amphetamine sulfate in mice, there is no approved association between reactivation of latent HSV infection with using methamphetamine in humans. This report probably shows this association between methamphetamine use and herpes simplex encephalitis.

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