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Free-living Amebae Infections  
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NOTE:  
A surveillance case definition is a set of uniform criteria used to define a disease for public health surveillance. Surveillance case definitions enable public health officials to classify and count cases consistently across reporting jurisdictions. Surveillance case definitions are not intended to be used by healthcare providers for making a clinical diagnosis or determining how to meet an individual patient’s health needs.  
CSTE Position Statement(s)  
16-ID-12  
Subtype(s)  
Acanthamoeba  
disease (excluding keratitis)  
Balamuthia mandrillaris  
disease  
Naegleria fowleri  
causing primary amebic meningoencephalitis (PAM)  
Subtype(s) Case Definition  
Expand All  
Acanthamoeba  
disease (excluding keratitis)  
Clinical Criteria  
An infection presenting as meningoencephalitis or encephalitis, disseminated disease (affecting multiple organ systems), or cutaneous disease.  
Acanthamoeba  
species  
(  
spp.) granulomatous amebic encephalitis (GAE) presents similarly to  
Balamuthia mandrillaris  
(  
B. mandrillaris)  
GAE with early personality and behavioral changes, depressed mental status, fever, photophobia, seizures, nonspecific cranial nerve dysfunction, and visual loss. Skin lesions and sinus disease may also be seen.  
Laboratory Criteria For Diagnosis  
Confirmatory laboratory evidence:  
Detection of  
Acanthamoeba  
spp. antigen or nucleic acid, such as immunohistochemistry or polymerase chain reaction (PCR) from a clinical specimen (e.g., tissue) or culture.  
Case Classification  
Confirmed  
A case that meets the clinical criteria and confirmatory laboratory criteria for diagnosis  
Comments  
Acanthamoeba  
spp. and  
B. mandrillaris  
can cause clinically similar illnesses and might be difficult to differentiate using commonly available laboratory procedures. Definitive diagnosis by a reference laboratory might be required. Several species of  
Acanthamoeba  
are associated with infection (i.e.,  
A. castellanii, A. culbertsoni, A. hatchetti, A. healyi, A. polyphaga, A. rhysodes, A. astonyxis, A. lenticulata and A. divionensis  
).  A negative test on cerebrospinal fluid (CSF) does not rule out  
Acanthamoeba  
spp. infection because the organism is not commonly present in the CSF.  
Although it is unknown if  
Acanthamoeba  
spp. can be transmitted via organ transplantation, patients presenting with the above clinical criteria who have received a solid organ transplant should be further investigated to determine if the infection was transmitted through the transplanted organ. An investigation of the donor  
should  
be initiated through notification of the organ procurement organization and transplant center.  
Balamuthia mandrillaris  
disease  
Clinical Criteria  
An infection presenting as meningoencephalitis or encephalitis, disseminated disease (affecting multiple organ systems), or cutaneous disease. Granulomatous amebic encephalitis can include general symptoms and signs of encephalitis such as early personality and behavioral changes, depressed mental status, fever, photophobia, seizures, nonspecific cranial nerve dysfunction, and visual loss.  
Painless skin lesions appearing as plaques a few millimeters thick and one to several centimeters wide have been observed in some patients, especially patients outside the United States, preceding the onset of neurologic symptoms by 1 month to approximately 2 years.  
Laboratory Criteria For Diagnosis  
Confirmatory laboratory evidence:  
Detection of  
B. mandrillaris  
antigen or nucleic acid, such as immunohistochemistry or PCR from a clinical specimen (e.g., tissue) or culture.  
Case Classification  
Confirmed  
A case that meets the clinical criteria and confirmatory laboratory criteria for diagnosis  
Comments  
Balamuthia mandrillaris  
and  
Acanthamoeba  
spp. can cause clinically similar illnesses and might be difficult to differentiate using commonly available laboratory procedures. Definitive diagnosis by a reference laboratory is required. A negative test on CSF does not rule out  
B. mandrillaris  
infection because the organism is not commonly present in the CSF. Once the disease progresses to neurologic infection, it is generally fatal within weeks or months; however, a few patients have survived this infection.  
Patients presenting with the above clinical criteria who have received a solid organ transplant should be further investigated to determine if the infection was transmitted through the transplanted organ. An investigation of the donor should be initiated through notification of the organ procurement organization and transplant center.  
Naegleria fowleri  
causing primary amebic meningoencephalitis (PAM)  
Clinical Criteria  
An infection presenting as meningoencephalitis or encephalitis. The clinical presentation of PAM is like that of acute meningitis caused by other pathogens and symptoms include headache, nausea, vomiting, anorexia, fever, lethargy, and stiff neck. Disorientation, mental status changes, seizure activity, loss of consciousness, and ataxia may occur within hours of initial presentation.  
Laboratory Criteria For Diagnosis  
Confirmatory laboratory evidence:  
Detection of  
Naegleria fowleri  
(  
N.  
fowleri)  
antigen or nucleic acid from a clinical specimen, such as immunohistochemistry or PCR.  
Supportive laboratory evidence:  
Visualization of motile amebae in a wet mount of CSF  
Isolation of  
N.  
fowleri  
in culture from a clinical specimen  
Case Classification  
Probable  
A case that meets the clinical criteria and the supportive laboratory criteria for diagnosis  
Confirmed  
A case that meets the clinical criteria and confirmatory laboratory criteria for diagnosis  
Comments  
Naegleria fowleri  
might cause clinically similar illness to bacterial meningitis, particularly in its early stages. Definitive diagnosis by a reference laboratory is required. Unlike  
B. mandrillaris  
and  
Acanthamoeba  
spp.,  
N. fowleri  
is commonly found in the CSF of patients with PAM. After the onset of symptoms, the disease progresses rapidly and usually results in death within 3 to 7 days.  
Patients presenting with the above clinical criteria and found to have a history of recreational freshwater exposure in the two weeks prior to presentation or are known to have performed nasal irrigation, such as use of a neti pot for treatment of sinus conditions or practice ritual ablution including nasal rinsing, in the absence of another explanation for their condition should be investigated further. Urgent confirmatory testing and treatment should be initiated.  
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NNDSS receives and shares case data from state, local, and territorial health departments to help public health monitor, control, and prevent serious diseases.  
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