Ventricular assist device

A ventricular assist device (VAD) is an electromechanical device for assisting cardiac circulation, which is used either to partially or to completely replace the function of a failing heart. The function of VADs is different from that of artificial cardiac pacemakers; some are for short-term use, typically for patients recovering from myocardial infarction (heart attack) and for patients recovering from cardiac surgery; some are for long-term use (months to years to perpetuity), typically for patients suffering from advanced heart failure.

Septicemia is the leading cause of mortality in left ventricular assist device. Bloodstream infection is a risk factor for intracranial hemorrhage.

Lee et al. reported three left ventricular assist device recipients who presented with bloodstream infection and developed aneurysmal subarachnoid hemorrhage. Case 1, a 37-year-old male with non-ischemic cardiomyopathy with HeartMate II, presented with confusion and found to have serratia bloodstream infection and left frontal lobe subarachnoid hemorrhage. The cerebral angiogram showed a right M3/M4 branch infectious intracranial aneurysm. He was treated with coil embolization and underwent device exchange. Case 2, a 41-year-old male with non-ischemic cardiomyopathy with HeartMate II presented with confusion and found to have methicillin-resistant Staphylococcus aureus bloodstream infection and bilateral frontal convexity subarachnoid hemorrhage. A cerebral angiogram showed left M3 and left A3 infectious intracranial aneurysms, which were treated with antibiotics alone. Case 3, a 58-year-old female with ischemic cardiomyopathy with HeartMate II presented with fever, found to have candida Albicans bloodstream infection and a parieto-occipital enhancing lesion concerning for cerebral abscess. Repeat computed tomography brain a week later showed a new right frontal subarachnoid hemorrhage. The cerebral angiogram showed a M4/M5 junction infectious intracranial aneurysm; the patient was not a surgical candidate and was transitioned to hospice. This case series emphasizes that left ventricular assist device-associated subarachnoid hemorrhage may be caused by infectious intracranial aneurysms when acute bloodstream infections are present [1].

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Lee T, Buletko AB, Matthew J, Cho SM. Bloodstream infection is associated with subarachnoid hemorrhage and infectious intracranial aneurysm in left ventricular assist device. Perfusion. 2019 Jul 24:267659119858853. doi: 10.1177/0267659119858853. [Epub ahead of print] PubMed PMID: 31339450.