External Ventricular Drains and Ventriculitis: Hands Off!

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**Background**

Device-associated infection is a frequent complication of external ventricular drainage. Coagulase-negative staphylococci (CoNS) are the most common pathogens in most studies.\textsuperscript{1} Reducing the frequency of EVD access and manipulation has been demonstrated to reduce infection risk.\textsuperscript{2}

**Aim**

To review EVD-associated ventriculitis over five years (2009-2013) in the national neurosurgical centre for Ireland.

**Methods**

The laboratory information system, electronic discharge letters and clinical microbiology records were reviewed to obtain data. EVD-associated ventriculitis was defined as isolation of either:

A. A recognised pathogen (e.g., *Staphylococcus aureus*, Gram negative bacilli or yeasts) from at least one CSF specimen or

B. CoNS or other skin organism from two or more CSF specimens OR from one CSF specimen with clinical evidence of infection

**Results**

- Forty-seven episodes of EVD-associated ventriculitis were identified in 41 patients
- The majority (22) were female. The average age was 45
- The most frequent indications for EVD insertion were intracranial haemorrhage and tumour (Figure 1)

- CoNS were the most common pathogens, followed by Gram negative bacilli (Figure 2)
- Where information was available (n=36), the median interval from EVD placement to infection was 12 days (range= 1-28)
- The average number of EVD manipulations before the positive culture was two
- In 11 cases (23.9%), EVD malfunction (CSF leak, disconnection, dislodgement or blockage), with associated manipulation, preceded the onset of infection

**Figure 2**

EVD Ventriculitis Pathogens 2009-2013

- Coagulase-negative staphylococci
- Gram-negative bacilli
- Enterococcus spp.
- Candida spp.
- Staphylococcus aureus
- Other

**Conclusion**

- Pathogens causing EVD ventriculitis in this population were similar to previously described
- EVD manipulation predisposes to infection

**Actions**

- Work is in progress to calculate the retrospective rate of EVD ventriculitis
- EVD manipulation is restricted to situations where it is clinically indicated and maximum sterile barrier precautions are observed
- Prospective surveillance post-intervention is underway

**References**

\textsuperscript{1}Scheithauer et al Prospective surveillance of drain associated meningitis/ventriculitis in a neurosurgery and neurological intensive care unit J Neurol Neurosurg Psychiatry 80:1381–1385 (2009)

\textsuperscript{2}Williams T A et al Decrease in proven ventriculitis by reducing the frequency of cerebrospinal fluid sampling from extraventricular drains J Neurosurg 15: 1040-1046 (2011)

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