Prevention of Ventricular Shunt Infection in Adults

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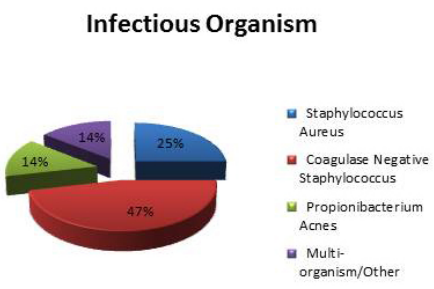
Learning Objectives
By the Conclusion of the session participants should be able to
#1 Describe measures that may prevent shunt infection
#2 Describe a complication of shunt placement
#3 Describe the importance of preventing shunt infections

Introduction

Shunt infection is frequent complication of ventricular shunting for hydrocephalus. Several techniques for shunt infection control have been reported including reservoir injection of a vancomycin/gentamycin solution and the use of antibiotic impregnated catheters.



Infectious Organism by species

Methods

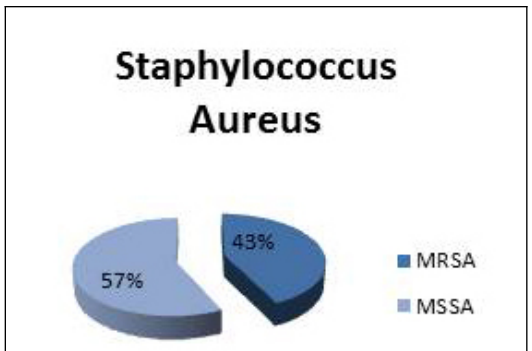
A database of all ventriculoperitoneal shunt procedures performed at the Mayo Clinic Rochester from January 2000-August 2013 was retrospectively reviewed. As the intention of the study was infection rates in adult patients, only patients 18 years or older at the time of shunt implantation were included. Infections were identified by a separate prospective database. Use of vancomycin-gentamycin solution and antibiotic catheters were identified by billing records. The primary outcome measure was shunt infection. Groups were compared by the use of antibiotic catheters and vancomycin/gentamycin solution vs use of one alone or none.

Results

A total of 516 records met inclusion criteria. Patients had a mean age of 61±19 years old (range 18-93). Twenty two infections (6.6 %) were seen among the 336 patients who did not receive the antibiotic solution or antibiotic catheters while 6 infections (3.3%) were seen among the 180 patients who received both. The relative risk 0.51 for shunt infection with antibiotic solution and antibiotic impregnated catheters did not reach statistical significance on univariate analysis, (95% CI 0.21-1.2, p=0.13).

Conclusions

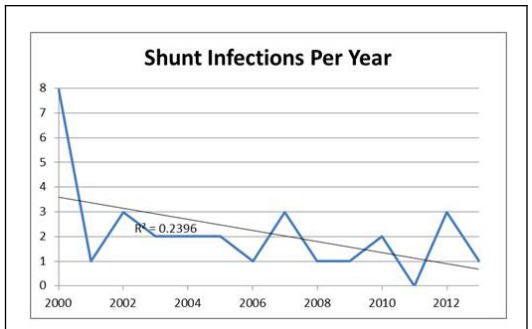
Shunt reservoir irrigation with vancomycin/gentamycin solution and the use of antibiotic impregnated catheters may help reduce shunt infection rates, but larger and better powered studies are needed.



Sensitivity of Staphylococcus Species to Methicillin

References

1.Ragel BT, Browd SR, Schmidt RH: Surgical shunt infection: significant reduction when using intraventricular and systemic antibiotic agents. Journal of neurosurgery 105:242-247, 2006
2.Wong JM, Ziewacz JE, Ho AL, Panchmatia JR, Bader AM, Garton HJ, et al: Patterns in neurosurgical adverse events: cerebrospinal fluid shunt surgery. Neurosurgical focus 33:E13, 2012



Shunt infections per year