

35 year old female with intractable headache, neck pain, photophobia, blurry vision, nausea, fevers and chills. Pain is worse with movement/neck flexion.

Infectious work up significant for leukocytosis 16.1. Blood cultures and UA negative. CT head with relatively stable ventricular size, negative for acute hemorrhage or ventriculomegaly.

Four months ago diagnosed with Idiopathic intracranial hypertension and had a VP shunt placed. Symptoms and signs of idiopathic intracranial hypertension are isolated to those produced by increased intracranial pressure (eg, headache, papilledema, double vision, transient visual obscurations, and vision loss). Also at the time there was an elevated ICP with normal cerebrospinal fluid (CSF) composition. No other cause of intracranial hypertension evident on neuroimaging or other evaluations.

A lumbar puncture was performed at current presentation and demonstrated an opening pressure of 40 cm H₂O. CSF with elevated WBCs (101, predominantly PMN's), and CSF gram stain positive for gram+ cocci in pairs. The CSF culture grew *S. epidermidis*.



Catheter associated infections are the most common causes of nosocomial infection. Organisms gain access to the device through 1) invasion of the skin insertion site or 2) contamination of the catheter hub.

-Characteristic flora include coagulase-negative staphylococci and *Staphylococcus aureus*

-Associated with biofilm formation on the surfaces of indwelling catheters

Biofilm – city of microbes

Components deposited from body fluids are often the first step in biofilm formation – termed conditioning film (fibrin, proteins, electrolytes, organic molecules). Bacteria will then bind to surface proteins and secrete polysaccharide matrix. Other species of bacteria may move into the biofilm and produce different microenvironments within a given biofilm. Under unfavorable

environmental conditions, such as exhaustion of nutrients or overcrowding, organisms can detach and become free-floating.

Biofilms have major medical significance for two reasons:

(1) biofilms decrease susceptibility to antimicrobial agents – impaired diffusion, proximity of bacteria can facilitate plasmid mediated resistance

(2) microbiology results based on floating organisms may not apply to organisms embedded within a biofilm.

Prevention strategies: 1. Maximal sterile barriers during catheter insertion, 2. Antimicrobial-impregnated catheters 3. Removing catheters as soon as the device is no longer essential to patient care