



## *Interferon-gamma deficiency leading to disseminated invasive aspergillus infection*

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### **Background:**

*Aspergillus fumigatus* species can be pathological in immunocompromised hosts. It may disseminate in an angio-invasive manner to involve other organ systems including the central nervous system. Aspergillosis involving the central nervous system may cause focal neurological deficits and cerebral abscesses are demonstrated as ring-enhancing lesions on brain imaging. Interferon gamma deficiency can predispose patients to developing atypical fungal infections.

### **Case report:**

A 36 year old female patient was admitted to ICU with Type 1 Respiratory failure. She was two weeks post-emergency C section at 31 weeks for suspected pre-eclampsia.

Past medical history included asthma, depression, an atrial septal defect with patent foramen ovale and well-controlled epilepsy. She had no history of childhood infections.

On day 3 of admission to the Intensive Care Unit, she had a PEA cardiac arrest. A CT Pulmonary Angiogram demonstrated a pulmonary embolus with right heart strain and diffuse ground glass opacification with evidence of superimposed infection.

### **Results:**

A sputum sample cultured *Aspergillus Fumigatus* complex which was sensitive to Amphotericin B, fluconazole and voriconazole.

She developed left sided hemiparesis. An MRI brain showed multiple haemorrhagic intracranial abscesses consistent with septic emboli with ventriculitis.

A Transoesophageal Echocardiogram was unremarkable. Beta D glucan levels were elevated at 293 while *Aspergillus* IgG titres were 74.

In addition to broad spectrum antibiotics she was commenced on voriconazole with a good clinical response. Follow up MRI brain 3 months later showed improving appearances apart from a frontal abscess which had increased in size.

Frontal brain biopsy showed perivascular lymphohistiocytic inflammation suggestive of CNS aspergillosis. 6 months into treatment, she was switched to isavuconazole therapy due to alopecia and liver function test derangement on voriconazole. Immunology services established a diagnosis of interferon gamma deficiency. Interferon gamma therapy was initiated but was stopped after 6 weeks due to associated fatigue and myalgia. She continues on isavuconazole with slow improvement in MRI brain changes and normalisation of serum Beta D Glucan levels.



### **Discussion:**

*Aspergillus Fumigatus* is an angio-invasive disease which can cause significant multi-organ dysfunction including neurological sequelae in immunocompromised hosts. It can lead to aggressive presentations of cerebro-pulmonary infection.

A thorough work-up should be performed to elicit any underlying immune dysfunction. Interferon-gamma deficiency precipitated Disseminated *Aspergillus* infection in this case.