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# VESSEL OCCLUSION DETECTED BY CONTRAST AGENT FLOW INTERRUPTION IN PULMONARY COMPUTED TOMOGRAPHY SCAN IS A CHARACTERISTIC RADIOMORPHOLOGICAL SIGN IN IMMUNOCOMPROMISED PATIENTS WITH INVASIVE PULMONARY ASPERGILLOSIS

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## Objectives

Although being a frequent complication in immunocompromised patients (pts), diagnosing invasive pulmonary aspergillosis (IPA) still remains a difficult issue. Recent data suggests that the inclusion of contrast agent (CA) flow patterns into computed tomography (CT; CA-CT) algorithm could be useful as a CA flow interruption based on the angioinvasive growth pattern with subsequent vessel occlusion could be detected in 10/12 pts with IPA.

As current data on this topic is limited to a few patients with proven or probable disease according to the 2008 EORTC/MSG consensus definitions, we retrospectively evaluated the occurrence of vessel occlusion detected by CA-CT in a larger, monocenter cohort of proven/probable IPA patients.

## Methods

We retrospectively analyzed patients` electronic records and hospital charts in the timeframe between August 2002 to October of 2013 and identified 59 patients with proven/probable IPA based on 2008 EORTC/MSG consensus definitions. In 35 of 59 pts CA-CT had been performed. Patients with baseline Creatinine values above 1.6 mg/dl had not been subjected to CA in routine analysis. Episodes were only counted as evaluable if CA-CT had been performed in the corresponding timeframe for the infectious episode with suspected IPA. The images were analyzed by 2 senior radiologists blinded to the patients' clinical courses, diagnoses or complications. In addition data of biomarker analysis with galactomannan (GM) and an *Aspergillus*-specific PCR was analyzed for potential correlation with observed vessel occlusion.

## Results

Vessel occlusion detected by CA-CT was found in 5/5 proven and 21/30 probable IA pts leading to a positivity in a total of 26 out of 35 (74%) proven/probable IPA patients. Mean bronchoalveolar lavage (BAL) GM was higher and BAL PCR positivity was more frequent in IPA patients with vessel occlusion as opposed to pts without vessel occlusion depicted by CA-CT.

## Conclusions

In our retrospective analysis of a large number of proven/probable IA patients we could confirm that vessel occlusion as detected by CA-CT is a *characteristic* infiltrate phenomenon of *Aspergillus spp.* reflecting the angioinvasive growth component of that pathogen. Biomarker positivity was more frequent respectively higher in patients with vessel occlusion possibly supporting the invasive growth pattern observed.

Based on our data, an observed vessel occlusion detected by CA-CT is suggestive of IPA and should prompt adequate diagnostic and therapeutic measures. From a clinical point of view the addition of CA in pulmonary computed tomography scans in patients with suspicion of IPA could enhance the diagnostic capabilities; a prospective study is ongoing.