

## The three musketeers: Cellulitis, Phlegmon and Abscess

Madam, One of the major debilitating complications of diabetes is diabetic foot. 15% of diabetics suffer from a foot infection during their life.<sup>1</sup> Patients spend more days in hospital for foot complications than for any other aspect of diabetes mellitus.<sup>2</sup> A key aspect in the management of diabetic foot infections is to assess the severity of infection, which determines the prognosis and the therapeutic strategy.<sup>1</sup> However, differentiating certain soft tissue infections in diabetic foot like cellulitis, phlegmon and abscess may be difficult.

Cellulitis is defined as a diffuse inflammatory process that spreads along fascial planes and through tissue spaces without gross suppuration where as phlegmon is an acute suppurative inflammation affecting the subcutaneous connective tissue.<sup>3,4</sup> On the other hand, abscess is defined as a localized accumulation of suppuration in a confined space formed by tissue disintegration.<sup>3</sup>

Classical local signs of inflammation (erythema, pain, sensitivity, heat, induration) with or without systemic clinical manifestations may be present in all the three conditions.<sup>1</sup> However, the presence of peripheral arterial disease, neuropathy or impaired leukocyte functions may reduce the local inflammatory response and classical signs or symptoms of local infection. Similarly, systemic signs of toxicity such as leukocytosis or fever may be absent or appear late, even in severe cases. Thus, neither local nor systemic inflammatory signs or symptoms and biological markers should be regarded as reliable for diagnosing foot infection in diabetic individuals.<sup>5</sup>

Diagnostic imaging options used for the evaluation of pedal infections include various combinations of conventional radiographs, nuclear medicine studies, and magnetic resonance imaging (MRI). MRI has been shown to be the most useful imaging study because it is capable of reliably detecting primary marrow signal abnormalities and secondary bone and soft-tissue abnormalities.<sup>6</sup> The exact delineation of soft-tissue infection on MR images allows precise preoperative localization and evaluation of the extent of fluid collections. This influences the choice of further therapy and helps in planning targeted minimal surgical

intervention.<sup>7</sup> Localized soft-tissue fluid collections may represent either regions of localized cellulitis, phlegmon or abscesses. Cellulitis manifests as ill defined area in the subcutaneous fat that is of low signal on T1 weighted and high signal on STIR (Short TI Inversion Recovery) and T2 weighted sequences. Intravenous gadolinium enhancement shows uniform enhancement of subcutaneous oedema. Whereas, abscess presents as focal lesion, which is low signal on T1 weighted images and high signal on T2 weighted and STIR images. Without intravenous gadolinium, an abscess may not be distinguishable from dense soft tissue oedema seen in severe cellulitis or from soft tissue phlegmon. With intravenous gadolinium an abscess demonstrates peripheral or rim enhancement, demarcating the fluid collection within, which is the unique finding.<sup>8</sup>

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