

The role of computed tomography in severe sepsis

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Introduction:

Sepsis is a common presentation in the emergency department (ED). Early recognition and management is crucial for patients' prognosis, as 30-50% of patients presenting with sepsis have treatment initiated in the ED.

Aims / Objectives:

Highlight the importance of utilizing CT imaging particularly CT hypoperfusion complex in obtaining a complete and rapid diagnosis of clinically suspected septic shock, etiologies and complications.

Case Summary:

A 66-year-old male patient brought to the ED with worsening generalized swelling mainly over the lower extremities, abdomen, and an "abdominal infection". He was hospitalized at another facility where he was treated for an unknown intra-abdominal infection. During hospitalization found to have liver problem, and valvular heart problem. ED vitals: blood pressure 97/83, pulse 91, respiratory rate 26, oxygen saturation 93% on room air. Review of systems was significant for: fatigue, chills, myalgia, shortness of breath, leg swelling, abdominal distention, abdominal pain, constipation, easy bruising, and confusion. On exam patient was severely jaundiced, confused, GCS 14/15, decreased breath sounds at the bilateral bases, and rales noted in the right middle field. His abdomen was soft, very mildly distended, without tenderness or guarding. Pitting edema was noted in his lower extremities. The remainder of the exam was unremarkable.

Management and Results:

A full septic work up was sent. Piperacillin-tazobactam was given empirically in addition to an initial dose of IV furosemide. Labs results were remarkable for Leukocytosis with WBC count of 17.1, and Low platelet of 63. Hyponatremia with a sodium of 129, hyperkalemia with a potassium of 5.7, significantly elevated urea of 24.9. Elevated bilirubin of 289, with direct bilirubin predominance of 233, and indirect of 56. And significantly elevated pro-BNP of 16,400. The CT abdomen and pelvis was concerning for incidental findings of bilateral pulmonary emboli, thrombi in the right atrium and left ventricle with right heart strain, Marked right-sided pleural effusion and extensive pulmonary infiltrates, patchy nodular infiltrates in the left lower lobe, 'Nutmeg' liver, ascites and anasarca. Additionally, there was cholelithiasis and severe contrast enhancement in both adrenal glands concerning for septic shock. The patient was dispositioned to the ICU for septic shock.

Discussion:

This was a case of septic shock evident on the CT scan, associated with pulmonary embolism in a patient with possible underlying right heart failure causing nutmeg liver and liver derangements.

Conclusion and Educational Outcome:

Even with the lack of clear history or localizing symptoms, high clinical suspicion, and utilization of assessment tools such as qSOFA and CT imaging alongside laboratory testing can help with prompt diagnosis and management. In this case, the presence of severe adrenal contrast enhancement is what alerted us to the severity of the patient's clinical picture. This sign highlights the central role played by the adrenal glands in mediating the sympathetic response to hypotensive shock and is associated with poor prognosis.