Severe DCS Presents with Hypotension, Abdominal Pain and ST Elevation

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Introduction:

DCS is often a delayed diagnosis; adversely affecting outcomes. We present a case where suspicion, and ED access ensured prompt recompression and a favorable outcome. The presenting complaints, however, mimic several life-threatening maladies that require timely workups.

***The Case*:**

A 55 year-old experienced diver presented to the emergency department (ED) via USCG helicopter with a chief complaint of severe abdominal pain. The patient made five dives to 90-95fsw. As this was his "routine", he was unsure of dive times or surface intervals. Traditionally he dives "until [his] shoulder hurts," and then stops. On this day, however, after the 5th dive, he began to experience a rapid onset of severe abdominal pain and "coldness". 911 was called and paramedics were initially dispatched to the boat harbor, but the patient seemed to rapidly worsen, so the Coast Guard was called. The patient was air-lifted directly from the boat, and flown to our facility.

In the ED, the patient was found to be hypotensive (61/39), he was complaining of abdominal pain and weakness. He had diffuse abdominal tenderness, cold extremities, and slowed mentation. Initial workup included an EKG showing ST elevations, S wave in lead I, Q wave and inverted T wave in lead III (Fig. 1). Chest x-ray and laboratory studies were unremarkable.

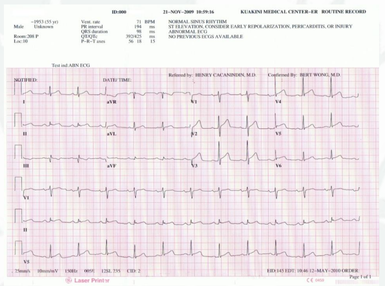


Fig 1: Patient's ECG.

The Differential Diagnosis:

The presentation of shock, abdominal pain, hypotension and ST-elevation in a 55 y/o M is concerning for aortic dissection, ruptured aortic aneurysm, pulmonary embolus (PE) or heart attack (MI), all of which are emergent and life threatening. As Hyperbaric physicians we also included DCS in the differential for this patient based on dive history alone.

Fig 2: The CT Scan

Pre-Treatment Images

Post-Treatment Images

Fig 2a: These images show cuts through the liver, notice gas bubbles in the left lobe, and post treatment resolution.

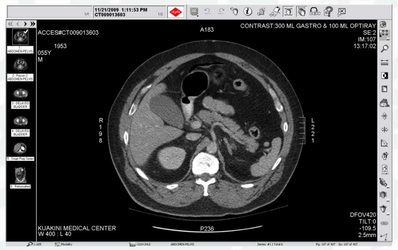
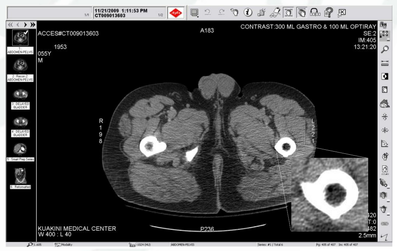


Fig 2b: These images show cuts through the mid abdomen, notice the 7 cm gas bubble in the mesenteric vasculature, and post treatment resolution.

Fig 2c: These images show cuts through the pelvis, notice gas bubbles in the bladder wall & acetabulum, and post treatment resolution.



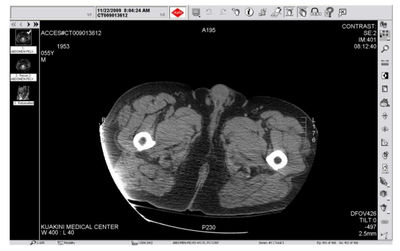


Fig 2d: These images show cuts through the femurs, notice gas bubbles in the bone marrow, and post treatment resolution.

***Discussion*:**

Because of the emergent nature of these maladies, rapid diagnosis was essential while medical stabilization was performed. Though the history was concerning for DCS, the presentation was less convincing, and inaccurate diagnosis could have been fatal. Cardiac Echo was performed at the bedside; with no wall motion abnormalities, and normal filling, MI and PE became unlikely. The patient was then rushed to the CT scanner for CT angiogram of the chest abdomen and pelvis, a study that proved to be diagnostic (Fig 2, Pre-treatment). With these dramatic findings, the primary care team repeated the study 24 hours later (Fig 2, Post-Treatment).

***The Outcome*:**

The patient was transferred emergently to the Hyperbaric Treatment Center and treated on a Treatment Table 60 (TT60) with extensions (comparable to USN Table 6). Because of hemodynamic instability, he required the use of Dopamine, a blood pressure raising medication. After the first dive, the patient's abdominal pain significantly improved, but he was still complaining of weakness, boring leg pain, and unsteady gait.

The patient was treated with daily with TT60s and remained in the ICU for an additional 48 hours. After the 3rd treatment, the patient had complete recovery from the diving issues, and was downgraded from the ICU. On day 3, however, he developed gastrointestinal bleeding, recovered, and was discharged home on day 5. At two-month follow-up, the patient had a normal colonoscopy, was back to free diving, but not scuba diving.

Conclusion:

Though CT scanning is rarely indicated in the diagnosis of DCS, there are times when it can prove useful, even diagnostic; speeding transfer to the recompression chamber. This modality should remain in the arsenal of the Hyperbaric physician.

References:
Carson WK, Mecklenburg B. The role of radiology in dive-related disorders. Mil Med. 2005 Jan;170(1):57-62.