BLUNT CARDIAC INJURY BREAKS THE HEART
A CASE OF TRAUMATIC VENTRICULAR SEPTAL DEFECT AND LITERATURE REVIEW OF THE SAME

Austin McCrea, DO, MS[1]; Allison McCrae MD[2]; Saptarshi Biswas MD[2]
1: General Surgery Resident, GSMC; 2: Acute Care and Trauma Surgery GSMC.

Background

- The management of TBCI begins with the suspicion and screening for an already rare injury. Omission or under appreciation of such an injury can cause significant morbidity and imminent death if unrecognized.
- While the incidence of VSD is 1-5% for penetrating cardiac injury, it is extraordinarily more uncommon for non-penetrating chest trauma.

Case Presentation

- 16 year old male presented to the trauma bay after being found in the driver seat of a care, intoxicated, restrained and unconscious after apparently driving off the road and into a ditch.
- 80/45 BP, 83 HR, GCS 6, 93% on NRB
- Patient was intubated for a low GCS by RSI and his blood pressure was responsive to fluid resuscitation.
- Patient was taken to CT and found to have an occult right sided pneumothorax that did not require a chest tube.
- Plasma serum ETOH 220
- Patient was extubated the next day
- The next night, the patient became tachycardic with a grade 3 holosystolic murmur worse with Valsalva and bilateral pulmonary rales requiring 5L NC.
- Chest x-ray suspicious for bilateral pulmonary edema without evidence of pneumothorax. CT demonstrated no pulmonary embolism but suspicious right heart failure.
- An echocardiogram demonstrated a ventricular septal defect at the apex of the septum with color flow from the LV to RV and otherwise normal systolic function.
- The patient decompensated requiring emergent intubation and transfer to a tertiary referral center which could perform an intervention.

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Pictures

Figure 1 :Transthoracic ECHO demonstrating VSD

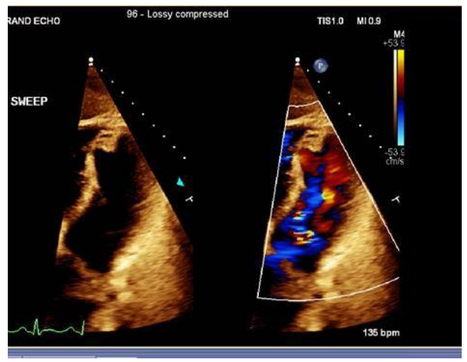

Figure 2 :3D ECHO demonstrating VSD

Figure 3: CTA of the chest demonstrating evidence of right ventricular enlargement espectally when compared to patients first CT of the chest.

Discussion

- Patients with VSD may after blunt thoracic trauma may be immediate or delayed from wither immediate blunt force or from inflammatory changes in the ventricular septum
- A proposed hypothesis of this concept involves a direct anterior to posterior compression during late diastole when the atrioventricular valves are closed and as the heart is compressed against the spine, the blunt force against a full heart and closed valves cause septal injury.
- Others suggest there is an opening of a previously closed congenital anomaly.
- Cardiac troponin highly sensitive as a first test, however, in this case, the presence of a new murmur was the trigger to order the best diagnostic modality, an echocardiogram.

Conclusion

- Small ventricular septal defects can be managed expectantly without intervention
- Surgical repair is indicated in circumstances as new onset heart failure and those that are not repaired surgically within 48hrs may be fatal

References

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