FATAL INTRA-OPERATIVE DISSEMINATED INTRAVASCULAR COAGULATION;

Extensive Surgery: A case report

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ABSTRACT... Authors present a case of 26 years old female who was having Esophagectomy done due to esophageal perforation secondary to severe corrosive intake strictures. Pre-operative course was uneventful, but during 5 hours of extensive surgery, she developed fulminant disseminated intravascular coagulation (DIC) which was initially managed, but proved to be fatal after 4 hours of ICU stay. Surgeons should be alert that hypercoaguable state can develop in unprepared patients having extensive surgery.

Key words: DIC, Extensive Surgery, Esophagectomy

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INTRODUCTION

Disseminated intravascular coagulation (DIC) is a complex systemic thrombo-hemorrhagic disorder involving generation of intravascular fibrin, consumption of pro-coagulants and platelets^{1,2,3,4}. The resultant clinical condition is characterized by intravascular coagulation and hemorrhage^{2,3}.

Scientifically, it is an acquired syndrome characterized by the intravascular activation of coagulation with loss of localization arising from different causes3,4. It can originate from and cause damage to the microvasculature, which if sufficiently severe, can produce organ dysfunction^{5,6}.

Though a rare occurrence in the per-operative setting, disseminated intravascular coagulation (DIC) is a syndrome that anesthetist and surgeon should be aware of and be prepared for its management^{7,8,9}.

Although Intra operative occurrence of severe DIC has been reported^{10,11}, but fulminant DIC in patients who are being operated for some other reason are not that common. We report a rare case of one of the few fulminant Intra-operative DIC.

DIAGNOSTIC CRITERIA

| | | - |
|--------------------|---|---|
| Biological DIC | Hemostatic defect without clinical manifestations | Elevated D-Dimers and 1 major criterion for consumption of platelets or coagulation factors or 2 minor criteria for consumption of platelets or coagulation factors |
| Clinical DIC | Hemostatic defect with hemorrhagic or ischemic manifestations | Same as above + microvascular bleeding and/or thrombosis |
| Complicated DIC | Hemostatic defect with hemorrhagic or ischemic manifestations that jeopardize organ function or patient prognosis | Same as above + organ failure (single or multiple) |

CASE

Case describes a lady 26 years of age , got married 6 months back somewhere in Kashmir, Pakistan. She had some social issues, due to which she did suicide

attempt by ingesting bathroom cleaner[Acid], chemical formula of that was unknown and amount wasn't accurately documented as well. She presented with symptoms of pain and burning sensation in epigastrium in the THQ Hospital, Kashmir labeled as Day 1.

They estimated the ingested acid to be around 30ml. Initial management was done with antacids and anti emetics. She was hemodynamically, clinically and biochemically stable, so was discharged on home prescription. She kept on deteriorating and presented to Emergency of our Holy Family Hospital, Rawalpindi, Pakistan on day 18 of ingestion, with complains of abdominal pain, dysphagia, odynophagia, ,weight loss and the loss of appetite. The series of events have been summarized in Table-II.

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Medicine department made provisional diagnosis of esophageal strictures based on History and planned endoscopy which was done on day 25. During that time, she was being managed on liquid feed and antacids. Endoscopy confirmed strictures in lower esophagus and acid burn injuries. Endoscopic dilatation was done. She was discharged on day 38 with supportive home prescriptions. She stayed at home from day 38 to day 62, when she presented again in the emergency of Holy Family Hospital with complaints of severe epigastric pain, odynophagia, vomiting and tenderness in the abdomen. Surgical department admitted her with suspicion of severe epigastric strictures and suspected perforation. Urgent Esophagectomy was planned immediately.

On day 63, pre-operative assessment was done by Anesthesia department, according to which, the

patient was not fit for surgery as evident from the laboratory investigations carried out and mentioned in table 3. Renal function tests and coagulation profile were markedly deranged. The surgery department was advised to optimize the patient with supportive management and build up accordingly to bear the stress of this extensive surgery. But surgical department proceeded as an emergency procedure despite deranged laboratory profile.

On day 64, Esophagectomy via trans-hiatal approach was performed. After pre-oxygenation, general anesthesia was introduced according to the standard protocols. Patient was stable hemodynamically at first but after 2 hours of surgery suddenly blood started oozing from surgical sites, patechia appeared on gut mucosa, but she was not bleeding from external orifices. Intra-operative coagulation was sent which

| Parameters | Medical Admission Labs | Discharge Labs | Surgical Pre-Op Labs | Surgical Intra-Op Labs | Surgical Pot-Op Labs | |
|---|------------------------------|-----------------------|------------------------------|-----------------------------|------------------------------|--|
| Hemoglobin (Hb) | 8.3 | 8.7 | 8.2 | 6.5 | 6.2 | |
| WBC Count | 13400 | 11000 | 9000 | 12500 | 12000 | |
| Platelets | 180 | 156 | 140 | 23 | 4 | |
| PT | 17 | 21 | 34 | >100 | >100 | |
| APTT | 39 | 41 | 44 | >85 | >150 | |
| Bilirubin | 1.6 | 1.5 | 2.9 | 3.4 | 6.7 | |
| Fibrinogen | - | - | 1.2 | 0.4 | 0.01 | |
| Fibrinogen Degradation Products (FDPs) | - | - | 21 | >300 | >300 | |
| S/Urea | 63 | 54 | 74 | 230 | 380 | |
| S/Creatinine | 1.6 | 1.4 | 1.9 | 3.6 | 8.5 | |
| S/Albumin | 2.8 | 2.4 | 1.9 | 1.8 | 1.8 | |
| S/Na S/K S/CI | 123 4.5 95 | 128 4.2 98 | 142 4.9 103 | 138 5.3 101 | 135 5.4 105 | |
| PH PaCo2 Pao2 HCO3 %SO2 | 7.41 34 92 26 97 | - - - - - | 7.37 49 91 21 99 | 7.2 47 88 17 88 | 6.9 55 124 18 90 | |
| Table-III I aboratory profile of patient | | | | | | |

showed marked derangement with confirmed DIC. 12 pints of fresh frozen plasma(FFPs), 8 pints of red cell concentrate(RCCs) and 6 pints of platelets were transfused intra-operatively. Surgery ended after 5 hours and the patient was shifted on ventilatory support in surgical ICU, where she stayed for another 4 hours on mechanical ventilator having continuously deteriorating hemodynamics, primarily hypotension. lonotropic support was started along with the conventional therapy and laboratory investigations were sent. After that patient started bleeding from external orifices as well, resuscitation was done but she collapsed / expired after 4 hours of ICU stay.

DISCUSSION

The pathogenesis of DIC begins with interaction between inflammation and coagulation at the level of the endothelium of the capillary¹², whatever the common caustaion may be as listed in the table IV.

Cell damage results in the release of tissue factor into the circulation, and that initiates the activation of the clotting cascade¹³.

Massive extensive surgeries leads to the production of cytokines with intense inflammatory activity that causes the down-regulation of endothelial glycosaminoglycans present in the glycocalyx,

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thereby impairing the functions of antithrombin, tissue factor pathway inhibitor, leukocyte adhesion, and leukocyte transmigration^{13,14}.

| Sepsis / Infection | Sepsis (Gram-positive or gram-negative Bacterial), Viral, Fungal or Protozoa | |
|---|---|--|
| Malignancy | Several types of solid tumors; leukemia, lymphoma | |
| Obstetric / Gynae | Pre-eclampsia, Abortion, Amniotic fluid embolus; Retained fetus, Abruptio placenta | |
| Surgical Procedures | Aneurysm, Cardiopulmonary bypass, Massive extensive abdominal or thoracic Surgeries | |
| Misce ll aneous | Trauma, Burns, Hepatic disease, Collagen disease, Shock | |
| Table-IV. Common causes of Disseminated Intravascular Coagulation (DIC) | | |

The cascade make the endothelium become a procoagulant surface, which leads to microvascular thrombosis with subsequent multiorgan dysfunction and then, ultimately, failure.

CONCLUSIONS

The surgeons must be cautious while carrying out extensive surgeries in un-prepared patients in the emergency situations.

The better idea is to build up the patient clincally so as to bear the stress of massive surgical intervention necessary to relieve the primary disease. **Copyright© 15 July, 2013.**

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Never give up on something that you can't go a day without thinking about.

Unknown

