

# FATAL INTRA-OPERATIVE DISSEMINATED INTRAVASCULAR COAGULATION;

## Extensive Surgery: A case report

Dr. Tabish Hussain, Dr. Jawad Zahir, Dr. Samina Sattar, Dr. Bushra Zaidi, Dr. Mumtaz Hussain Shah, Dr. Qudsia Anjum Qureshi, Dr. Tumenjavkhlan Sosorburam

**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 hypercoagulable state can develop in unprepared patients having extensive surgery.

**Key words:** DIC, Extensive Surgery, Esophagectomy

### Article Citation

Hussain T, Zahir J, Sattar S, Zaidi B, Shah MH, Qureshi QA, Sosorburam T. Fatal intra-operative disseminated intravascular coagulation; Extensive Surgery: a case report. Professional Med J 2013;20(6): 1053-1057.

## INTRODUCTION

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

Scientifically, it is an acquired syndrome characterized by the intravascular activation of coagulation with loss of localization arising from different causes<sup>3,4</sup>. It can originate from and cause damage to the microvasculature, which if sufficiently severe, can produce organ dysfunction<sup>5,6</sup>.

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<sup>7,8,9</sup>.

Although Intra operative occurrence of severe DIC has been reported<sup>10,11</sup>, 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

Classification	Definition	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)

Table-I. Diagnostic criteria for DIC

## 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



Parameters	Medical Admission Labs	Discharge Labs	Surgical Pre-Op Labs	Surgical Intra-Op Labs	Surgical Post-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	123	128	142	138	135
S/K	4.5	4.2	4.9	5.3	5.4
S/Cl	95	98	103	101	105
PH	7.41	-	7.37	7.2	6.9
PaCo2	34	-	49	47	55
Pao2	92	-	91	88	124
HCO3	26	-	21	17	18
%SO2	97	-	99	88	90

Table-III. Laboratory 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. Inotropic 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 capillary<sup>12</sup>, whatever the common causation 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 cascade<sup>13</sup>.

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,

thereby impairing the functions of antithrombin, tissue factor pathway inhibitor, leukocyte adhesion, and leukocyte transmigration<sup>13,14</sup>.

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
Miscellaneous	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 clinically so as to bear the stress of massive surgical intervention necessary to relieve the primary disease.

**Copyright© 15 July, 2013.**

## REFERENCES

- Oz MC, Rondinone JF, Shargill NS. **FloSeal Matrix: new generation topical hemostatic sealant.** J Card Surg 2003;18:486–93.
- Coughlin SR, Vu TK, Hung DT, Wheaton VI. **Characterization of a functional thrombin receptor.** Issues and opportunities. J Clin Invest. 1992; 89: 351–355.
- Gershon SK, Chang AC, Purvis WV, Salive M. **Misadministration of topical bovine thrombin.** JAMA 1999;282:1919
- Dichek D, Quertermous T. **Thrombin regulation of mRNA levels of tissue plasminogen activator and plasminogen activator inhibitor-1 in cultured human umbilical vein endothelial cells.** Blood. 1989;74:222–228.
- Gloviczki P, Driscoll DJ: **Klippel-Trenaunay syndrome: current management.** Phlebology 2007, 22(6):291-298.
- De Backer D, Creteur J, Preiser JC, Dubois MJ, Vincent JL. **Microvascular blood flow is altered in patients with sepsis.** Am J Respir Crit Care Med. 2002; 166: 98–104.
- Pusateri AE, Holcomb JB, Bhattacharyya SN, Harris RA, Gomez RR, MacPhee MJ, Enriquez JI, Delgado AV, Charles NC, Hess JR. **Different hypotensive responses to intravenous bovine and human thrombin preparations in swine.** J Trauma 2001;50:83–90
- Noel AA, Gloviczki P, Cherry KJ Jr, Rooke TW, Stanson AW, Driscoll DJ: **Surgical treatment of venous malformations in Klippel-Trenaunay syndrome.** J Vasc Surg 2000, 32(5):840-847.
- Arnout J, Vermylen J. **Current status and implications of autoimmune antiphospholipid antibodies in relation to thrombotic disease.** J Thromb Haemost. 2003; 1: 931–942.
- Wananukul S, Nuchprayoon I, Seksarn P: **Treatment of Kasabach-Merritt syndrome: a stepwise regimen of prednisolone, dipyridamole, and interferon.** Int J Dermatol 2003, 42(9):741-748.
- Whitten CW, Greilich PE. **Thromboelastography: past, present, and future.** Anesthesiology. 2000: 92: 1223–1225.
- Sabel M, Stummer W. **The use of local agents: surgical and surgifoam.** Eur Spine J 2004;13: S97–S101.
- Levi M. **Disseminated Intravascular Coagulation.** Crit Care Med 2007;35:2191–4.

14. Terada N, Arakaki R, Okada Y, Kaneo Y, Nishimura K: **Management of urethral hemangiomas associated with Klippel-Trenaunay-Weber syndrome by endoscopic sclerotherapy.** Int J Urol 2007, 14(7):658-660.

**AUTHOR(S):****1. DR. TABISH HUSSAIN**

Department of Anesthesia and Intensive Care,  
Holy Family Hospital, Rawalpindi Medical College,  
Rawalpindi, 46000, Pakistan.

**2. DR. JAWAD ZAHIR**

Department of Anesthesia and Intensive Care,  
Holy Family Hospital, Rawalpindi Medical College,  
Rawalpindi, 46000, Pakistan.

**3. DR. SAMINA SATTAR**

Department of Anesthesia and Intensive Care,  
Holy Family Hospital, Rawalpindi Medical College,  
Rawalpindi, 46000, Pakistan.

**4. Dr. Bushra Zaidi**

Department of Anesthesia and Intensive Care,  
Holy Family Hospital, Rawalpindi Medical College,  
Rawalpindi, 46000, Pakistan.

**5. Dr. Mumtaz Hussain Shah**

Department of Anesthesia and Intensive Care,  
Holy Family Hospital, Rawalpindi Medical College,  
Rawalpindi, 46000, Pakistan.

**6. Dr. Qudsia Anjum Qureshi**

Department of Anesthesia and Intensive Care,  
Holy Family Hospital, Rawalpindi Medical College,  
Rawalpindi, 46000, Pakistan.

**7. Dr. Tumenjavkhlan Sosorburam**

Department of Anesthesia,  
Intensive and Cardiac Care,  
Union Hospital, Tongji Medical College,  
Huazhong University of Science and Technology,  
Wuhan, 430030, P.R. China.

**Correspondence Address:****Dr. Tabish Hussain C/O Dr. Jawad Zahir**

Department of Anaesthesia, Intensive care and pain Medicine  
Holy Family Hospital, Rawalpindi Medical College  
Rawalpindi, 46000, Pakistan  
drtabish@hotmail.com

Article received on: 04/10/2012  
Accepted for Publication: 15/07/2013  
Received after proof reading: 03/12/2013



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

Unknown