Abdominal Compartment Syndrome

Current Management

Essay

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By

Karim El-Said El-Karadawy

M. B. B, Ch.

Suez Canal University

Under Supervision of

Professor. Dr. Abd El-Wahab Mohamed Ezzat

Professor of General Surgery

Faculty of Medicine

Ain Shams University

Dr. Mohamed Mahfouz Mohamed

Lecturer of General Surgery

Faculty of Medicine

Ain Shams University

Faculty of Medicine

Ain Shams University

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استاذ الجراحة العامة

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الدكتور/محمد محفوظ محمد

مدرس الجراحة العامة

كلية الطب/جامعة عين شمس

كليـــة الطـب

جامعة عين شمس

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INTRODUCTION

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Abdominal compartment syndrome (ACS) is defined as an increased intra-abdominal pressure (IAP > 20 mmHg) in combination with single or multiple organ dysfunction which was not previously present. This condition affects multiple organ systems in graded fashion. Early identification and abdominal decompression are essential in the management and treatment of this difficult situation; otherwise, it leads to multiple organ failure and ultimately, death. Increased intra-peritoneal volume conditions are the most common source of elevated IAP. Extrinsic compression of the abdomen by burn eschars, pneumatic anti-shock garments, tight abdominal closure, massive volume resuscitation for any reason, and inflation of the peritoneum by CO2 in laparoscopic surgery can also lead to increased IAP. *(Madigan et al., 2008).*

Abdominal compartment syndrome can be divided into the following 3 categories:

-Primary or acute abdominal compartment syndrome: This occurs when intra-abdominal pathology is directly responsible for the compartment syndrome.

-Secondary abdominal compartment syndrome: This occurs when no visible intra- abdominal injury is present but injuries outside the abdomen causing fluid accumulation.

-Chronic abdominal compartment syndrome: This occurs in the presence of cirrhosis and ascitis, often in the later stages of the disease. *(Paula, 2009).*

Organ dysfunction with abdominal compartment syndrome is a product of the effects of intra-abdominal hypertension (IAH) on multiple organ systems. Abdominal compartment syndrome follows a destructive pathway similar to compartment syndrome of the extremity. Problems begin at the organ level with direct compression; hollow systems such as the intestinal tract and portal-caval system collapse

under high pressure. Immediate effects such as thrombosis or bowel wall edema are followed by translocation of bacterial products leading to additional fluid accumulation, further increasing intra-abdominal pressure. At the cellular level, oxygen delivery is impaired leading to ischemia and anaerobic metabolism. Vasoactive substances such as histamine and serotonin increase endothelial permeability, further capillary leakage impairs red cell transport, and ischemia worsens (Madigan et al., 2008).

Compartment syndrome in the abdomen is usually suggested by an increased abdominal girth. If this change is acute, the abdomen is tense and tender. Although this may be difficult to recognize in patients with morbid obesity, other patients often have an abdomen clearly out of proportion to their body habitus. This may be easier to visualize with the patient standing or sitting upright. The secondary

effects of abdominal compartment syndrome include distended abdomen, wheezes, rales, increased respiratory rate, cyanosis and miserable appearance. *(Paula, 2009).*

The indications for surgical decompression of abdominal compartment syndrome (ACS) are not clearly defined, but undoubtedly, some patients benefit from it. In patients without recent abdominal incisions, it can be achieved with full-thickness laparostomy (either midline, or transverse subcostal) or through a subcutaneous linea alba fasciotomy. In spite of the improvement in physiological variables and significant decrease in IAP, however, the effects of surgical decompression on organ function and outcome are less clear. Because of the significant morbidity associated with surgical decompression and the management of the ensuing open abdomen, more research is needed to better define the appropriate indications and techniques for surgical intervention *(Leppaniemi, 2009).*

AIM OF WORK

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To highlight the current and most recent trends in management of the Abdominal Compartment Syndrome.

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ABB.	Meaning
ACS	Abdominal Compartment Syndrome.
APP	Abdominal Perfusion Pressure.
ARDS	Acute Respiratory Distress Syndrome.
CO	Cardiac Output.
CPP	Cerebral Perfusion Pressure.
CSF	Cerebro-Spinal Fluid.
CT	Computed Tomography.
CVP	Central Venous Pressure.
DL	Decompressive Laparotomy.
FG	Filtration Gradient.
GEDV	Global End-Diastolic Volume.
GFP	Glomerular Filtration Pressure.
IAH	Intra Abdominal Hypertension.
IAP	Intra Abdominal Pressure.
ICP	Intra Cranial Pressure.
ICU	Intensive Care Unit.

IV	Intra Venous.
MAP	Mean Arterial blood Pressure.
MCFP	Mean Circulatory Filling Pressure.
$PaCO_2$	Partial Carbon Dioxide Tension (Pressure).
PAOP	Pulmonary Artery Occlusion Pressure.
PTP	Proximal Tubular Pressure.
RVEDV	Right Ventricular End-Diastolic Volume.
SAP	Sever acute pancreatitis
SLAF	Subcutaneous anterior abdominal fasciotomy at linea alba
SVV	Stroke Volume Variation.
TAC	Temporary abdominal closure
TFL	Tensor fascia lata.
VR	Venous Return.
WSACS	World Society of Abdominal Compartment Syndrome.

Alphabetically ordered.