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A Case Report On Extensive AWMI with Gas Gangrene

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Abstract

Background:- Gas gangrene is a highly fatal soft tissue infection with a high death rate. Clostridium species are the most common cause of these infections, which might go unnoticed owing to their fast deterioration. Failure to recognise sepsis early can result in severe systemic sepsis, with amputation being a typical fate.

Case Presentation :- A 70-year-old woman presented to the hospital with no notable medical history but low urine output, abdominal distension, and was first diagnosed with severe AWMI. The physical examination and test data revealed that the patient had acquired Acute Kidney Disease, metabolic acidosis as a result of Gas Gangrene in the Abdomen, and septic cardiogenic shock during her hospital stay.

Conclusion :-To treat the AWMI and probable systemic sepsis, the patient was initially treated with vigorous inotropic therapy and a robust antibiotic regimen. The patient was in serious condition due to his AWMI state, AKI, and extensive progressing gas gangrene. Despite receiving many courses of high-grade antibiotics, the patient did not respond to the treatment, resulting in her death.

Key words :- Gas gangrene, Cardiogenic Shock, Acute Kidney disease, AWMI

Introduction

Clostridium perfringens is the most prevalent cause of gas gangrene, which is an extremely fatal infection of soft tissue. This is the same as myonecrosis and is marked by the fast progression of gangrene of the wounded tissue as well as the creation of foul-smelling gas(1) Due to time constraints, it might be difficult to diagnose the etiological bacteria at times, and the disease can spread quickly. As a result, emperical therapy frequently begins before the structural diagnosis.

AWMI (Anterior wall Myocardial Infarction) According to the World Health Organization's annual monitoring report, cardiovascular disease is the leading cause of mortality worldwide, causing 12 million deaths each year.(2)

AKI simply refers to Renal Dysfunction that has lasted less than four weeks and is a typical consequence of sepsis in this scenario, with a bleak prognosis. Patients with septic AKI seemed to have a greater mortality rate.(3) It is characterised by a rise in nitrogenous products, as well as hydroelectrolytic and acid–base imbalances. It is common among hospitalised patients, particularly in intensive care units.

Cardiogenic Shock (CS) is a condition of severe end organ hypoperfusion and hypoxia caused by main cardiac problems, with clinical symptoms include chilly extremities, oliguria, and altered mental status.(4)

However, there is a great deal of variation in CS, including its definition, patient demographics and risk profiles, the types of predictors assessed, medications available or used, and outcome measures.(5)

Positive outcomes are solely dependent on the time of discovery and management of the CS causative cause. External supportive care and gadgets can reduce quality of life after treatment, however this is dependent on how promptly the shock was treated.

Case report

70 year old female patients came to hospital with complaints of decreased urine output and abdominal distension which also caused severe pain since 3 days.

Past history

Operated for cataract before 6 years and has undergone TKR surgery 5 years back.

General examination

On examination patient was conscious, crying , playful and well oriented to place .

General examination revealed no abnormal findings in the patient.

Local Examination

On local examination of the abdomen, Extensive air was noted in lower abdomen.

CT Scan

MDCT Scan of Abdomen with pelvis was performed without any contrasts. It showed that the left rectus abdominis muscles and left sided internal and external oblique and transversus abdominis muscles appear mildly bulky as compare to right side with multiple intra muscular air foci, suggesting the presence of infective Myositis,

Extensive air was noted in subcutaneous plane in lower abdomen, the lower abdomen on left side extended upto the left lower thoracic region.

CORONARY ANGIOGRAPHY REPORT

CORONARY ANGIOGRAPHY REPORT	
Anesthesia:	Local
Procedure Route:	Right Femoral
Cather:	JR 5F, JL 5F
Dye:	Omnipaque
Hemodynamic data:	HR:82 BPM; ABP:130/70mmHg; SpO2: 97 %
CORONARIES:	
LMCA:	NORMAL
LAD:	Mid to distal segment shows long 60-70 % lession with TIMI 1 flow
LCx:	Dominant, Normal
RCA:	Ostio-proximal segment shows plaquing 20-30% lesion.

The findings indicated that Sepsis ARF was present. Severe LV dysfunction, extensive anterior wall MI, and single vessel disease were also seen (LAD diffuse disease). Killip class 4 cardiogenic shock was diagnosed in this patient.

ECG:

ECG showed possible acute anterior infarct with literal ST elevation.

Laboratory Reports

COMPLETE BLOOD COUNT			
TEST DESCRIPTION	VALUE(s)		UNIT
	11-06-2019	12-06-2019	
BLOOD COUNT			
HEMOLOBIN	13.0 g/dl	12.2 g/dl	11.0 - 16.0
R.B.C COUNT	4.60 M/ul	4.25 M/ul	4.20 - 5.40
WBC COUNT	4510 uL	8000 uL	4000 - 10000
PLATELETS		190000	15000-450000/cumm
DIFFERENTIAL COUNT	69%		40 - 70
NEUTROPHILS	26%	84%	20 - 45
LYMPHOCYTES	3%	8%	upto 6
MONOCYTES	2%	7%	upto 4
BASOPHILS	0%	0%	upto 1
PLATELET COUNT	205000/uL	190000/uL	150000 - 450000
HAEMOGRAM			
HCT(Hematocrit)	38.40%		37.0 - 47.0
M.C.V(Mean Corp. Vol)	83.5 fL		80.0 - 97.0
M.C.H(Mean Corp. Hb)	28.3 pg		26.0 - 32.0
M.C.H.C(Mean Corp. Hb Connect)	33.9 g/dl		31.0 - 36.0
RDW-CV	13.7	13.7	11.5 - 14.5
CREATNINE			
Ser. Creatinine	1.13 mg/dl		0.4 - 1.4

BLOODSUGAR RANDOM			
Random Blood Sugar	168.3 mg/dl		Upto 140

ABG(ARTERIAL BLOOD GAS) ANALYSIS		
TEST DESCRIPTION	OBSERVED VALUE	REFRENCE RANGE/UNITS
PH	7.1	7.35 - 7.45
PCO2	20.7	35 - mmHg
PO2	337	80.00 - 100.00 mmHg
HCO3 act	6.2	21 - 28 m.mol/L
O2(sat)	99.9	95 - 98 %
TCO2	21	23 - 27 vol %

APIT(ACTIVATED PARTIAL THROMBOPLASTIN TIME)		
TEST DESCRIPTION	OBSERVED VALUE	REFRENCE RANGE/UNITS
APIT TEST	32.9	25.0 - 35.0 sec
CONTROL	25	seconds

PROTHROBIN TIME		
TEST DESCRIPTION	OBSERVED VALUE	REFRENCE RANGE/UNITS
PROTHROBIN TIME TEST	27.66	9.5 - 13.5 sec
CONTROL	13	sec
PROTHROBIN INDEX	47	%
PROTHROBIN RATIO	2.13	
INR	2.13	

BIOCHEMISTRY		
TEST DESCRIPTION	OBSERVED VALUE	REFRENCE RANGE/UNITS
LIPASE	154	73 - 393 U/L
S.AMYLASE	89	25 - 115 IU/L
TOTAL PROTEIN	6	6.4 - 8.2 g/dl
ALBUMIN	3	3.4 - 5.0 g/dl
GLOBULIN	3	1.9 - 3.5 gm/dl
ALBUMIN/GLOBULIN RATIO	1	0.9 - 2.0
LACTIC ACID	8	0.4 - 2.0 m.mol/L
SGOT	275	15 - 37 U/L
SGPT	83	12 - 78 IU/L

BIOCHEMISTRY		
TEST DESCRIPTION	OBSERVED VALUE	REFRENCE RANGE/UNITS
C.REACTIVE PROTEIN(CRP)	364.8	0-5 mg/L
SERUM POTASSIUM	4.6	3.5-5.1 mmol/L

SERUM SODIUM	140	136 - 146 mmol/L
CREATININE	2.84	0.55 - 1.30 mg/dl
BLOOD UREA	51.36	17 - 50 mg/dl

GRAM STAIN SMEAR	
TEST	RESULT
SPECIMEN:	Abdominal fluid is tissue for gas gangrene
RESULTS OF GRAM`S STAIN:	few pus cells, organism not seen, gram positive bacilli causing gas gangrene Clostridium species were not seen.

Treatment Chart

DRUG	DOSE/ROUTE/FREQUENCY
IV Fluids	IV/60 ML per HR
Inj. Meropenem	1000mg/IV/BD
Inj. Teicoplanin	400mg/IV/BD
Inj. Doxycycline	100mg/IV/BD
Inj. Acetyl Cystein	1gm/IV/TDS
Inj. Pantocid	40mg/IV/BD
Inj. Clindamycin	600mg/IV/OD
Inj. Metrogyl	500mg/IV/BD
Tab. Atorvastatin	10mg/Oral/BD
Tab. Ivabradin	2.5mg/Oral/As per HR
Oint. Mupirocin	BD
Inj. Tramadol	50mg /IV/4-6 Hrly

Discussion

When the patient first arrived at the hospital, the physician's first inclination was to assess the patient's heart state, which revealed an acute infarct on angiography. However, because the patient remained alert, it was assumed that the patient had survived the attack owing to the absence of any chronic illnesses such as diabetes or hypertension, which have a more foreseeable prognosis. One of the consequences was supposed to be distension. A microbial culture test was required to begin customised antibiotic medication due to aberrant lymphocyte, neutrophil, and platelet counts, as well as highly increased CRP values.

It became more difficult to control the patient's stomach pain owing to distension, and the distension in the belly worsened. The next day, dark black brown spots appeared on the patient's skin. Because primary abdominal gas gangrene is a quickly deadly and underreported illness that is difficult to diagnose and treat clinically(6), an urgent Abdominal CT Scan was done to confirm the diagnosis.

A rising creatinine level and abnormal blood tests suggested the start of acute renal damage. Because no organism was found in the abdomen fluid or gangrene tissue after the culture report, intensive empirical antibiotic therapy was required to address the systemic sepsis. Later, the patient developed metabolic acidosis, which was treated with sodium bicarbonate infusions. On the same day, the patient had to be intubated owing to tachyponea and desaturation, requiring mechanical ventilation support. Low albumin levels and high SGOT values suggested that the liver was also malfunctioning. She then developed refractory hypotension, requiring more inotropic support.

As she left orientation, the physicians counselled the patient's relatives about the patient's deteriorating health.

Conclusion

Despite advancements in aetiology, diagnostic tools, and treatment approaches, sepsis-induced AKI continues to have high mortality rates(3), especially in patients with GG. The patient acquired shock quickly, lowering the likelihood of a satisfactory therapeutic result.(7) Shock duration is important because prolonged shock can result in systemic inflammatory response failure and multisystem organ failure, limiting the effectiveness of revascularization and mechanical support.(5), which the patient also displayed. As a consequence, the patient did not respond to the therapy, resulting in his death. The effort at cardiopulmonary resuscitation (CPR) was also unsuccessful.

Abbreviations :-

AWMI	Anterior wall myocardial infarction
°F	Degree Fahrenheit
AKI	Acute Kidney Injury
ICU	Intensive Care Unit
GG	Gas gangrene
CPR	Cardiopulmonary resuscitation
INJ.	Injection
TAB.	Tablet
BD	(*bis in die*) means "twice a day"
TDS	(*ter in die*) means "three times a day"
HR	Heart Rate
CS	Cardiogenic Shock

Declaration of patient consent

The authors certify that they have obtained appropriate patient consent form. The patient’s parents understand that their child name and initials will not be published and due efforts will be made to conceal his identity.

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Conflict of interest

All authors declare that they have no conflict of interest.

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