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Case Report

Pseudomonas septicaemia: in a case of pancytopenia

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ABSTRACT

Pseudomonal infection is a rare condition with multiple systemic complications. A new condition of interest is ecthyma gangrenosum in a patient with pseudomonas septicaemia with pancytopenia and megaloblastic anaemia. So here we present you the case of Ecthyma gangrenosum in a 20-year-old female with pseudomonas septicaemia due to pancytopenia. A high degree of clinical suspicion is required, but a tissue sample is ultimately necessary for definitive diagnosis.

Keywords: Ecthyma gangrenosum, Pancytopenia, Pseudomonas

INTRODUCTION

Ecthyma gangrenosum is a rare cutaneous disorder caused by *Pseudomonas aeruginosa*.

Pathogenesis

Pseudomonas is an opportunistic pathogen with toxic and invasive effects. It rarely affects normal person. Pseudomonas infection is seen in patients with immunodeficiency like patients with pancytopenia, on immunosuppressive therapy.[1,2]

It is a necrotizing haemmorhagic vasculitis with bacterial invasion at the walls of vessels. Bacterial invasion may come from inside of the invaded vessel in case of septicemia or by direct inoculation of the bacteria through breakdown of mechanical defensive barriers of skin or mucous membrane.[2-5] So the damage of the vessel causes interruption of local blood supply, which causes redness, edema, pustule and hemorrhage that causes necrosis of skin and ulcer formation.[3,4] Causes of pancytopenia could be megaloblastic anemia, hypoplastic bone marrow, bone marrow suppressants and other immune deficiency states associated with neutropenia.[5]

CASE REPORT

A 20 years old female came with chief complains of fever with chills since 2 weeks, generalized body ache since 2 weeks and lesion on nose since 1 week.

History of fever 2 weeks back which was high grade, intermittent associated with chills and rigor not associated with cough or cold, no aggravating factor and relieved on taking medication from local doctor along with history of generalized body ache 2 weeks back which was more on exertion and associated with generalized weakness which was relieved on taking rest.

Then before 1 week she developed a lesion on nose which gradually increased in size which was reddish in colour, painful initially and gradually developing an ulcer with no aggravating or relieving factors with history of nasal stuffiness and pain on left side of nasal septum.

But there was no history of headache, nausea, vomiting, loose stools, burning micturition, jaundice, weight loss, any co morbidities, pain in abdomen, any medication for same, TB/ BA/ HTN/ DM.

General examination

Patient was conscious, co-operative and well oriented to time, place and person and comfortable in sitting position. Patient was febrile with temperature 101.3°C, Vitals stable with Blood Pressure=110/70 mm hg and Pulse=84/min, Pallor++, Bilateral pedal oedema, Cervical lymph nodes were palpable and tender. But no clubbing, cyanosis, icterus.

Systemic examination

Abdomen was soft, non-tender, respiration was equal on both sides, Cardiovascular: S1S2+ and No signs of encephalopathy.

Table 1: Investigations.

	29/08/16	01/09/16	03/09/16	04/09/16	09/09/16
Hemoglobin	6.8	6.4	6.8	7.2	9.4
WBC	0.2	0.5	0.8	1.3	2.2
Platelets	31	20	54	30	109
PCV	24.9	200	20.6	22.8	29.7
MCV		73	78.5	78	87.2
Sr creatinine	0.5	0.6	0.5	0.5	0.5
Sodium	131	133	129	129	135
Potassium	4.4	3.4	3	3.1	3.5
Chloride	101	100	92	99	105
Total bilirubin	0.7	1	1.8		
Direct/Indirect	0.4/0.3	0.6/0.4	1/0.8		
Total protein	4.4	5.2			
Albumin	2.8	2.7	2.4		
SGOT	6.6	13	5.2		
SGPT	22.6	17.3			
Uric acid	2.1	67.4			
ESR	80		55		
Alkaline phosphate	91.5				
Urine routine and microscopy	Normal				
Urine culture and sensitivity	Normal				
T3/T4/TSH		0.2/2.3/32.3			
PT/INR		18.1/1.5		20.1/1.8	
Vit B12		111.3			
Serum Iron	25.3				
TIBC	134				
UIBC	108.7				
Ferritin	462				
Malarial parasite	Negative				
Malarial antigen test	Negative				
Dengue	Negative				
HIV	Negative				
HBsAg	Negative				
Anti HCV	Negative				
Retic count		0.2			
LDH				207	
ANA		27.06			

Cutaneous examination

Single, well defined necrotic plaque with erythematous raised borders, slopping edges, floor being nasal septum present on tip of nose. In oral mucosa multiple, well defined, white plaques present over palate. Genital mucosa was spared and Nails, palms and soles were spared.

On presentation patient had haemoglobin 6.8, platelets 31000 and total leucocyte count 200. Patient was immediately started on broad spectrum antibiotics such as injectable piperacillin and tazobactum plus metronidazole and all cultures (blood, urine and throat swab) were sent.[4] Based on culture sensitivity reports which were suggestive of pseudomonas infection patient was further treated with injectable amikacin, injectable cephapime and additional antifungal and antiviral antibiotic coverage was given to prevent any opportunistic infection. Woods lamp examination of lesion was also suggestive of pseudomonas infection.[7]

Cause of pancytopenia was initially thought to be low vitamin b12 levels (megaloblastic anaemia), but bone marrow biopsy was suggestive of hypoplastic bone marrow.[9] Inspite of higher antibiotics patient had a poor response to therapy.

Hence two whole blood tranfusions were given and injection filgrastim (G-CSF=Granulocyte colony stimulating factor) was given after which patient condition improved drastically and TLC count increased to 2.2. Wound debridement was done and necrotic tissue was removed. Septoplasty was planned for cosmetic reasons.

DISCUSSION

Barker first coined Ectyma Grangrenosum in 1897. It is characterized by life threatening septicemia along with cutaneuous manifestations. Patients with pancytopenia and immunodeficiency states have more chances of developing this infection.[8] The association of these three components: sepsis, EG, P. aeruginosa, was first described by SPEIRS et al. in 1963 and other authors have also described this rare condition.[11] To decrease the mortality of this condition, the treatment should include prompt recognition of the skin lesion, appropriate antibiotic coverage, and surgical debridement.

Appropriate antibiotic coverage along with prompt management of pancytopenia is recommended to improve prognosis of patient and reduce mortality rate.[10] Pseudomonas elastase enzyme destroys the blood vessels, which is responsible for invasive manifestations.[9]

In present case the use of filgrastim has improved patient condition drastically. The fundamental principle in treatment of this condition is appropriate use of antibiotics along with management of pancytopenia. The patient's diffuse vascular compromise, as evidenced by her history of acute onset infectivity in addition to dengue fever, may have placed her at higher risk for presenting with cutaneous manifestations after *Pseudomonas aeruginosa* inoculation. In this case, the interaction between the infectious etiology of EG and the patient's vascular status cannot be fully ascertained. However, this is the first report to suggest this link.

CONCLUSION

Ectyma gangrenosum due to *Pseudomonas aeruginosa* should be diagnosed at the earliest in pancytopenia patients to avoid septicemic complications. In the case of antibiotic treatment failure, granulocyte growth factors may be added. Frequent *Pseudomonas aeruginosa* infections justify bacteriologic survey to look for hospital contamination.

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