CASE REPORT

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Staphylococcus Lentus as a cause of septic shock

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A 36 years old lady, with negative past medical and surgical history, her condition started as headache and fever (the fever increased in grade until reached 41°C within 3 weeks), after 3 weeks she developed vomiting and diarrhea, initially diagnosed as typhoid fever, the patient had a skin lesion on her breast diagnosed as submammary folliculitis which appears as a ruptured bulla. She admitted to intensive care unit in medical city complex Baghdad / Iraq after failure of initial management with empirical antibiotic therapy, in ICU she presented with septic shock status and managed with multiple antibiotics until improved, the patient discharged home with procalcitonin level of 0.8, normal liver, renal and hematological measures. Follow up showed no signs of remission and good clinical condition.

INTRODUCTION

Sepsis is considered the leading cause of mortality due to infectious disease particularly when doesn't diagnose and managed appropriately, its dysregulates host response to infections causing a life threating organ dysfunction (1). Septic shock is a serious subcategory of sepsis in which abnormalities in cellular metabolism had a high mortality rate, in septic shock patient can be presented with continuous hypotension necessitate vasopressors to preserve mean arterial pressure ≥ 65mmHg with a serum lactate level > 2 mmol/L (18mg/dL) despite of proper resuscitation. In spite of these criteria, inpatient mortality is exceed 40% (1). We submit here a condition of septic shock a consequent of *Staphylococcus Lentus* (*S. Lentus*) infection, a zoonosis; a coagulase-negative bacterium which is seldom invade human being (2).

CASE REPORT

36 years old lady, married with negative past medical and surgical history, her condition started as headache and fever (the fever increased in grade until reached 41°C within 3 weeks), after 3 weeks she developed vomiting and diarrhea, initially diagnosed as typhoid fever. The only remarkable thing in the physical examination was a lesion diagnosed as submammary folliculitis which appears as a ruptured bulla as it shown in figure 1.

After initial treatment, she admitted to intensive care unit / Ghazi Al-Hariri Hospital (Medical City Complex, Baghdad/Iraq) immediately where she presented with hyperglycemia, hypokalemia, hypothyroidism, anemia, leukopenia, thrombocytopenia, elevated renal indexes, liver enzymes, and lipid profile; also elevated sepsis biomarker as shown in table 1.

The patients also had hypoalbuminemia and Arterial blood gas test shows respiratory alkalosis, her ultrasound was abdominal showing gallstone and mild splenomegaly of 16 cm in size, her chest developed basal crepitation and on chest CT scan it appears to have bilateral pneumonic consolidations with mild pleural effusion. Continuous Renal Replacement Therapy (CRRT) started immediately for 72 hours' duration (subclavian double lumen catheter and central venous line inserted at the time) her central venous pressure was 28, SPO2 was 85, blood culture is taken and sent for study, viral screen was negative, her condition improved by this time and her vital measures and renal function improved first, then she took two single donor platelets and 3 packed red blood cells and her hematological readings improved.

TREATMENT

Initially; she started a treatment with ceftriaxone intravenously 1 gram twice daily with intravenous fluids and paracetamol infusions, after continuing on this treatment for 5 days the condition gets worse and the fever grades increased to more than 41°C with severe shivering, vomiting, night sweats with hallucination, fainting attacks, rapidly she gets hypotension (Blood pressure 80/40 mmHg, Pulse rate: 135 beat per minute) and tachypnea (respiratory rate: 42). She admitted to intensive care unit / Ghazi Al-Hariri Hospital (Medical City Complex, Baghdad/Iraq) immediately.

At admission to ICU she started (Imipenem / Cilastatin + Amikacin) as empiric antibiotics. After 10 days on this treatment, fever decreased to 39°C and the general condition improved and started oral feeding, the result of blood culture and sensitivity appears to show Staphylococcus Lentus which was sensitive to the following antibiotics: Gentamicin, Tobramycin, Nitrofurantoin and Trimethoprim/Sulfamethoxazole. And resistant to: Benzyllpencillin, oxacillin, Levofloxacin, moxifloxacin, erythromycin, clindamycin, teicoplanin, vancomycin, tetracycline, fusidic acid, and rifampicin, as shown in figure 2. Azithromycin started according to the respiratory specialist consultation in addition to the old treatment where the fever subsided totally from the second dose of azithromycin, she started Continues Positive Airways Pressure (CPAP) for 3 days with incentive spirometry and good physiotherapy. The patient discharged home with procalcitonin level of 0.8, normal liver, renal and hematological measures. Follow up showed no signs of remission and good clinical condition.

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Table 1 Biochemical profile of the patients

TEST	Findings	Mark	Normal value
Fasting blood sugar	133 milligram / deciliter	High	74 – 106 milligram / deciliter
T3	1.209 Nano mole / Liter	Low	1.26 – 2.75 Nano mole / Liter
High density lipoproteins	10 milligram / deciliter	Low	40 – 60 milligram / deciliter
Triglycerides	313 milligram / deciliter	High	30 – 150 milligram / deciliter
Hematocrit	8.5 %	Low	36% - 47% (woman)
Hemoglobin	10.3 gram / deciliter	Low	12 -18 gram / deciliter
Mean corpuscular hemoglobin	26.9 pico gram / cell	Low	27 – 33.2 pico gram / cell
White blood cells	2600 X 10^9 cells /Liter	Low	4 – 10 X 10^9 cells/Liter
lymphocytes	19.3%	Low	20 – 40 %
Monocytes	0.7 %	Low	2 – 10 %
Basophils	0.2%	Low	0 – 1 %
Eosinophils	0%	Low	1 – 6 %
platelet	36000 platelets per microliter	Low	150000 – 400000 platelets per microliter
Mean platelet volume	13 femtolitre	High	6-10 femtolitre
Platelet distribution width	69.8 %	High	0.1 – 1%
Blood urea	55 milligram / deciliter	High	15 – 45 milligram / deciliter
Serum creatinine	2.11 milligram / deciliter	High	0.7 – 1.4 milligram / deciliter
Serum potassium	3.2 millimol / deciliter	Low	3.5 – 5.1 millimol / deciliter
SGOT	1070 units per liter of serum	High	15 - 37 units per liter of serum
SGPT	153 units per liter of serum	High	14 - 63 units per liter of serum
Direct bilirubin	0.38 milligram / deciliter	High	0 – 0.2 milligram / deciliter
Procalcitonin	11.1 Nano gram	High	< 0.05 Nano gram
Partial thromboplastin time	45 seconds	High	30 – 40 seconds
Prothrombine time	15.1 seconds	High	11 - 13 seconds
Complement protein C4	44 milligram / deciliter	High	10 – 40 milligram / deciliter

Figure 1 Submammary ruptured bulla

Bionumber: 530000104221211
Organism Quantity:

Selected Organism: *Staphylococcus lentus*

Susceptibility Information	Card: AST-P580		Lot Number: 3600606403	Expires: Jul 25, 2019 13:00 CDT	
	Completed: Oct 18, 2018 07:47 CDT		Status: Final	Analysis Time: 11.43 hours	
Antimicrobial	MIC	Interpretation	Antimicrobial	MIC	Interpretation
Cefoxitin Screen	POS	+	Teicoplanin	>= 32	R
Benzylpenicillin	>= 0.5	R	Vancomycin	>= 32	R
Oxacillin	>= 4	R	Tetracycline	>= 16	R
Gentamicin	4	S	Tigecycline	1	
Tobramycin	2	S	Fosfomycin		
Levofloxacin	4	R	Nitrofurantoin	32	S
Moxifloxacin	>= 8	R	Fusidic Acid	>= 32	R
Inducible Clindamycin Resistance	NEG	-	Mupirocin		
Erythromycin	>= 8	R	Rifampicin	>= 32	R
Clindamycin	>= 8	R	Trimethoprim/Sulfamethoxazole	<= 10	S
Linezolid					

+= Deduced drug *= AES modified **= User modified

Figure 2 Culture and sensitivity tests

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DISCUSSION

Staphylococcus Lentus is a member of the *Staphylococcus sciuri* family a common bacteria in the environment, it can be detected from a diversity of animals (domestic, farm and wild animals) (3). It's a commensal bacteria colonizing the skin of number animals. It has widely been detected from animals that produced foods involving domestic fowel and livestock, and from their products. Individuals in contact with animals have also been notified to be bearers of S. lentus. In dairy animals, S. lentus showed to be linked with subclinical mastitis, and in infrequent cases, S. lentus passed infections to humans (4), in this case the patient denied any animal contact, which may indicate a possible alternative pathway of transmission.

Similar to many staphylococci, *S. lentus* is able to earn antibiotic resistance genes, encompassing erythromycin ribosome methylase (*erm*) genes, which give resistance to macrolide, lincosamide, and Streptogramin B (MLSB) antibiotics (4), which is in agreement with our findings range of antibiotics resistance as shown in figure 2.

S. *sciuri* may infect humans and causes severe infections, such as bacterial endocarditis, septic shock, urinary infection, incision, wound, or abrasion infections, endophthalmitis, and pelvic inflammatory disease (5), this patient presented with fever, pain, tenderness, swelling, infection which is similar to what reported previously in a study of Mazal and Sieger (6), except for leukocytosis where this patient showed leukopenia.

S. lentus differs from S. *sciuri* lacking the Mec A gene, rendering *S. lentus* more liable to antimicrobials than other members of thisgroup, which they known to be oxacillin-resistant staphylococci, and repeatedly had resistance to other antibiotics (7).

Patient outcome was good which is similar to previous studies reported infection in pritonium by Rivera et al. (2) and splenic abscess reported by Karachalios et al., (8). *S. lentus* showed response to Imipenem / Cilastatin + Amikacin plus azithromycin, while in Rivera et al it showed response to vancomycin plus tobramycin, while in Karachalios, et al report of splenic abscess responded well to ceftazidem (8). In this report and the previous studies (2, 8) the complete resolution and the clinical improvement achieved within 2 weeks of antibiotic therapy.

CONCLUSION

Animal contact is considered a serious and dangerous source of infection, any type of bacteria can cause sepsis, empirical therapy alone is not sufficient for curing bacterial infection (especially in ICU setting) and the need for incorporating initial bacterial screen can have early benefit for the patient outcome.

REFERENCE

1. Singer M, Deutschman CS, Seymour CW, Shankar-Hari M, et al. The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). JAMA. 2016;315:801-10.
2. Rivera M, Dominguez MD, Mendiola NR, Roso GR, et al. Staphylococcus lentus peritonitis: a case report. Peritoneal dialysis international : journal of the International Society for Peritoneal Dialysis. 2014;34:469-70.
3. Stepanovic S, Dakic I, Morrison D, Hauschild T, et al. Identification and characterization of clinical isolates of members of the Staphylococcus sciuri group. Journal of clinical microbiology. 2005;43:956-8.
4. Schwendener S, Perreten V. New MLSB resistance gene erm(43) in Staphylococcus lentus. Antimicrobial agents and chemotherapy. 2012;56:4746-52.
5. Dakic I, Morrison D, Vukovic D, Savic B, et al. Isolation and molecular characterization of Staphylococcus sciuri in the hospital environment. Journal of clinical microbiology. 2005;43:2782-5.
6. Mazal C, Sieger B. Staphylococcus lentus: The troublemaker. International Journal of Infectious Diseases. 2010;14:e397.
7. Stepanovic S, Jezek P, Dakic I, Vukovic D, et al. Staphylococcus sciuri: an unusual cause of pelvic inflammatory disease. International journal of STD & AIDS. 2005;16:452-3.
8. Karachalios GN, Michelis FV, Kanakis KV, Karachaliou I, et al. Splenic abscess due to Staphylococcus lentus: a rare entity. Scandinavian journal of infectious diseases. 2006;38:708-10.

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Author contribution:
Laith G. Shareef: Conception and design of the work, the acquisition, analysis, and interpretation of data for the work, and Drafting the work. Waleed Ibrahim Ali: Conception and design of the work, interpretation of data for the work, and revising it critically for important intellectual content Hiba Ameer Naser: the acquisition, and interpretation of data for the work Hayder Adnan Fawzi: Conception and design of the work, and Drafting the work and finally revising it critically for important intellectual content

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