

## Fever after Total Gastrectomy

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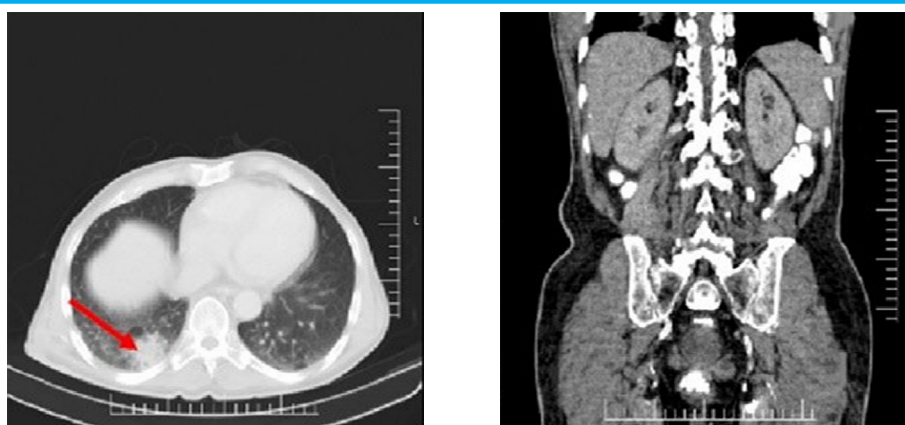
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**Fig.1:** Focal patchy alveolar consolidation at the posterior basal segment of the right lower lobe is noted (arrow).

A 77-year-old man with a history of gastric lymphoma developed fever 7 days after total gastrectomy. His medical history was unremarkable, and no cardiac abnormality was noted in the perioperative cardiologic consultation. On his physical examination, the oral temperature was 38.8 °C. Other physical exams, including the chest and abdomen, were not significant. The surgical site

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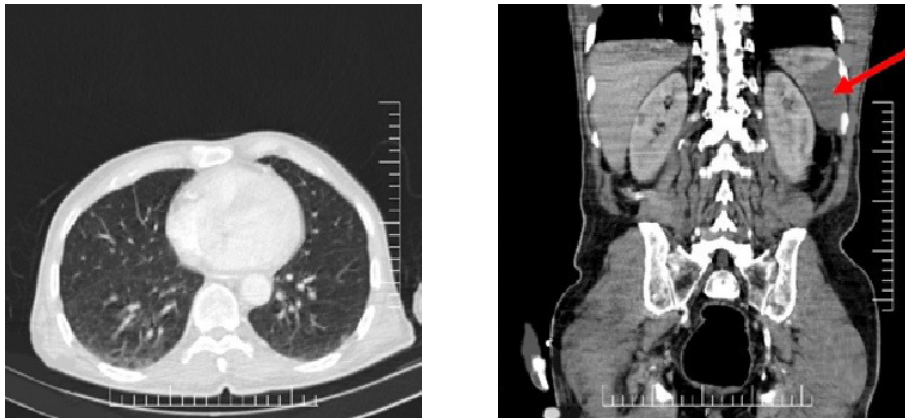
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was normal without any evidence of inflammation and infection. The laboratory test results revealed a white blood cell (WBC) count of 11000/mm<sup>3</sup>, erythrocyte sedimentation rate (ESR) of 48 mm/h, and negative C-reactive protein (CRP). Considering the life-threatening consequence of multidrug-resistant bacterial infection, broad-spectrum antibiotic therapy including intravenous meropenem and metronidazole was initiated. The blood and urine cultures were negative. The abdominal and pelvic computed tomography (CT) did not demonstrate any abnormalities except for a lower lobe lesion in the right lung (Figure 1). Four days following antibiotic therapy, the patient's fever stopped, and the blood leukocytosis subsided. He was discharged from the hospital on a combination of oral ciprofloxacin and metronidazole with a possible diagnosis of pneumonia or an unknown abdominal infection. One week later, the patient returned to the hospital with high-grade fever, respiratory distress, and confusion. The laboratory tests showed a WBC count of 17000/



**Fig.2:** Wedge-shaped hypodensity at the lower pole of the spleen is seen, which mostly suggests an infarction (arrow).

mm<sup>3</sup>, ESR of 62 mm/h, and positive CRP. The blood culture was positive for methicillin-susceptible *Staphylococcus aureus* (MSSA). He underwent a new chest and abdominal CT. His previous lung lesion was disappeared while he has developed a new hypodense lesion in the spleen (Figure 2).

### What is your diagnosis?

**Answer:** Infective endocarditis as a cause of postoperative fever

MSSA bacteremia, spleen infarction, and suspicious pulmonary lesion, which could have been interpreted as a septic embolus, proposed infective endocarditis (IE) in this patient. Echocardiography showed significant aortic valve vegetations. According to Duke criteria, our patient met at least one major criteria (echocardiogram positive for IE) and three minor criteria (positive blood culture, vascular phenomena, and fever), to fulfill clinical criteria for IE. The patient underwent cardiac surgery as well as medical therapy and ultimately discharged.

### DISCUSSION

Postoperative fever is a common problem with self-limiting to severe life-threatening etiology. Thus, wait and see approach versus immediate action is challenging. The most common causes of postoperative fever are trauma related to surgery and infections. However, other etiologies such as medications, including antibiotics, blood transfusion, deep venous thrombosis, pulmonary embolism, myocardial infarction, and pancreatitis, should be kept

in mind. Recently the role of atelectasis as a cause of postoperative fever is being called into question (1, 2).

It seems focused rather than the shotgun approach leads to better diagnosis decision. Infectious causes of postoperative fever usually develop more than two days after surgery; however, neither this cut off day and even nor the presence or absence of fever rules out infection in the post-surgery period. So a careful history taking and a targeted physical examination could prompt a timely diagnosis. The "five W's" is a helpful tool for remembering the principal etiologies of postoperative fever, which refers to Wind (pulmonary-associated causes such as aspiration pneumonia, pulmonary embolism, and atelectasis), Water (urinary tract infection), Walking (deep venous thrombosis), Wound (surgical site infection), and "What did we do?" (catheter-related infections, drug fever, blood product transfusions) (3).

Commonly, *staphylococcus aureus* bacteremia (SAB) emerges from surgical site infection or intravenous catheters after surgery. Importantly metastatic infections, including IE, are frequent during SAB, and classic clinical IE presentations are often absent(4). Likewise, in this case, the MSSA bacteremia and evidence of metastatic pulmonary and spleen septic emboli raised the probability of IE. The first negative blood culture could be due to the prior use of antibiotics and do not rule out IE. In this patient, precise heart examination could have revealed a new cardiac murmur that was not present before the surgery at the first admission. Four- to six-week intravenous nafcillin or oxacillin, as well as surgical intervention in the presence of large vegetations (> 1

cm in diameter), is recommended for MSSA IE treatment (5). Ciprofloxacin does not cover MSSA bacteria; thus, the patient returned after the first discharge.

## CONCLUSION

Endocarditis as a cause of postoperative fever should be kept in mind even if the patient does not have predisposing factors, especially when the source of fever remains unrecognized. Besides, meticulous history taking and physical examinations could assist in revealing insidious causes of post-operative infections.

### Authors' Contribution

Data collection: MH; writing the primary draft and critical revision of the manuscript: AA.

### Ethical statement

The Ethics Committee of Tehran University of Medical Sciences declared ethical approval for the current study.

## ACKNOWLEDGMENTS

We thank the patient for his cooperation.

## CONFLICT OF INTEREST

The authors declare no conflict of interests related to this work.

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