Fusobacterium Nucleatum, a New Invasive Pathogen in Neutropenic Patients?

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INTRODUCTION

Anaerobic bacteria infrequently cause systemic infection in hematological patients with neutropenia following chemotherapy (1). Recently 3 neutropenic patients with severe oropharyngeal mucositis developed systemic infection caused by Fusobacterium nucleatum, a Gram-negative anaerobic rod.

CASE REPORTS

Case 1
Patient A, a 44-year-old female, underwent an autologous bone marrow transplantation as a consolidation treatment for a refractory anemia with blast excess. Myelo-ablative chemotherapy consisted of etoposide and dimethylbusulphan. As standard infection prophylaxis, oral ciprofloxacin 2 x 500 mg, oral amphotericin-B 4 x 500 mg and benzylpenicillin 4 x 10⁶ IU i.v. was given, the latter to prevent streptococcal septicemia. On day 12, mucositis grade 4 on the WHO scale developed. On day 14, penicillin was replaced by vancomycin because of high fever and the suspicion of a central venous catheter associated infection. On day 29, an inspiratory stridor developed and intubation was necessary. Blood cultures were positive for F. nucleatum. Antibiotic therapy was changed to metronidazole and cephalothin. Mucosal damage progressed and a pulmonary infiltrate developed. The bone marrow remained aplastic. On the 36th day after transplantation the patient succumbed.

Microbiological data
F. nucleatum was identified by conventional bacteriological methods and by gas-liquid chromatography. The strains were susceptible to benzyl penicillin, cephalothin, clindamycin and metronidazole, but resistant to ciprofloxacin and erythromycin. They were all β-lactamase-negative.

DISCUSSION

Three patients with systemic infection caused by F. nucleatum are described. All had severe chemotherapy-induced neutropenia and high fever. In the only patient surviving the infection, bone marrow recovery was probably a significant factor. There is resemblance to post-anginal septicemia (Lemierre's Syndrome, 2) described in 1936 in healthy young adults, usually caused by F. necrophorum.

F. nucleatum is a strictly anaerobic Gram-negative rod normally found in the gastrointestinal, genito-urinary and respiratory tracts. We have no reason to assume that this sudden increase is due to better culture methods, to transmission by personal contact, or to contaminated food. For various reasons, penicillin was replaced by vancomycin to prevent endogenic streptococcal infections. This
infection prophylaxis is not active against F. nucleatum and may have resulted in a selection and overgrowth of it.

All patients received very intensive chemotherapy leading to a severe mucositis. F. nucleatum might have exacerbated an oropharyngeal mucositis that could serve as a portal of entry for the systemic infection.

In patients with fever and severe mucositis, early treatment with antibiotics directed at anaerobes should be considered.

REFERENCES

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