We are describing a case of severe disseminated salmonellosis (septicemia) and focal lesions in almost any organ. The latter may be provoked by bloodstream invasion by enteric fever, acute gastroenteritis or septicopyemia. Salmonellosis includes infection by any of approximately 1,700 serotypes of salmonellae. Clinically, it is characterized by enteric fever, acute gastroenteritis or septicopyemia. The latter may be provoked by blood stream invasion (septicemia) and focal lesions in almost any organ. We are describing a case of severe disseminated salmonellosis with unusual clinical features. The contribution of an underlying immunodeficiency to this systemic illness is discussed.

Case Report

An 18-year-old Israeli of Turkish origin who had been employed as a waiter in the period prior to admission was hospitalized urgently with a fever of five days' duration. The disease was accompanied by chills, severe abdominal pains, diarrhea and vomiting. Physical examination was negative initially, but on the third day of hospitalization abdominal pain increased and the patient was feverish (39.5°C). There was a sudden enlargement of the liver accompanied by considerable tenderness, and an acute abdomen due to liver abscess or empyema of the gall bladder were suspected. The patient underwent emergency laparotomy, but with the exception of massive liver enlargement and mild splenomegaly, no other abnormality was detected. Salmonella enteritidis D, phage group E2, sensitive to ampicillin, chloramphenicol and co-trimoxazole, was isolated from repeated blood and stool cultures. The initial laboratory findings revealed a positive Widal test to antigen O in a 1:800 titer, anemia (hemoglobin 9.6 g/dl), leucocytosis of 26,000/mm³ with a left shift, thrombocytosis of 530,000/mm³, an erythrocyte sedimentation rate (Westergren) of 95/120 mm and serum bilirubin of 4.7 mg/dl. Serum aspartate aminotransferase (GOT) activity was 39 U/I (normal <40 U/I) and prothrombin time 17%. All other coagulation tests, including fibrinogen split products, were normal. The patient received 3 g chloramphenicol/day (minimal inhibitory concentration as determined by agar dilution was 2.5 mg/l). His condition improved and he was discharged with only minor complaints. However, one week later, while still on antibiotic therapy, he was again hospitalized for recurrence of fever and upper right abdominal pain. Physical examination was negative and there was no hepatosplenomegaly. Anemia with a hemoglobin level of 10 g/dl and leukocytosis of 26,000/mm³ was found. Blood and stool cultures remained positive for Salmonella group D and the Widal test titer for antigen O was 1/400. Treatment was changed to 12 g ampicillin/day and after transient improvement, the high fever returned accompanied by chills, chest and diffuse bone pains, especially in the left clavicle, left ribs and low back. The left axillary lymph nodes were palpable; the dorsa of both wrists, left clavicle and some ribs were tender with swellings and bony irregularities. Radiographs of the left clavicle showed lytic areas with periostal reactions and a pathological fracture in its distal part (Figure 1). Similar osteolytic changes were present in the ribs (11th and 12th on the left) and in the dorsal vertebrae D11–D12. Septic focal lesions of increased uptake were found during a bone scan with technetium pyrophosphate – 99Tc – in the posterior part of ribs 5, 7, 9 and 11 on the left, in the left clavicle and shoulder blade, in the vertebral bodies D10–D12 (Figures 2 and 3) and in the distal left tibia. Blood cultures still showed Salmonella D growth, but stool and urine cultures were finally negative. There was an onset of new symptoms: bloody diarrhea requiring blood transfusions, herpes zoster lesions over the anterior left chest and bilateral conjunctivitis. Chest X-rays including tomography were ordered following an attack of sudden dyspnea and showed mediastinal dilatation (Figure 4) with pressure on the right bronchus. Mediastinoscopy was performed and a biopsy taken from the enlarged paratracheal lymphnodes. Histological examination disclosed non-specific lymphadenitis. Biopsy of the left clavicle revealed a pathological fracture and non-specific aseptic osteomyelitis and osteitis. Bone and lymph node tissue cultures for fungi, mycobacterium and other bacilli were sterile. The tests with 5 PPD units of tuberculin (Mantoux), the Feldman-Sabin dye test and the Kveim reaction were negative. Bone marrow aspirate showed mild hyperplasia of plasma cells and eosinophilia. The AFB culture was negative. The bile aspirate obtained by cholecdochus catheterization after cholecystokinin in-
Injection was sterile. Scanning and sonography of the abdomen revealed homogeneous and mild hepatosplenomegaly.

The results of laboratory tests were as follows: anemia (hemoglobin 9.8 g/dl), leukocytosis (19,500/mm³ with 70% neutrophils), thrombocytosis with up to 689,000/mm³, high erythrocyte sedimentation rate (Westergren) (85/110 mm). Serum glucose, urea, potassium, sodium, phosphorus, acid and alkaline phosphatases, uric acid, bilirubin, creatinine and haptoglobin were normal. Antinuclear factor, L. E. cells, VDRL and Wasserman tests were negative. Serum albumin was 4.05 g/dl and globulin 5.05 g/dl; protein electrophoresis showed hypergammaglobulinemia at 31%. Prothrombin time was prolonged to 20%. Hemoglobin electrophoresis excluded hemoglobinopathy. Complement C₃ and C₅ levels and serum immunoglobulin concentrations were within normal limits. There were only 30% T cells of peripheral blood lymphocytes and the proliferative response of T cells to stimulation with phytohemagglutinin and concanavaline A was strongly decreased. Nitroblue tetrazolium (NBT) reduction by leukocytes was also decreased.

Thereafter the patient was treated for a period of nine weeks with 3 g intravenous chloramphenicol/day and six ampoules of co-trimoxazole/day (each ampoule containing 80 mg trimethoprim and 400 mg sulfamethoxazole). The patient's general condition improved, the fever went down, bone pains decreased and the herpes zoster eruptions and the eye inflammation regressed. _Salmonella_ was no longer isolated from the blood or the stool. Lymphadenopathy disappeared. The pulmonary roentgenogram including computerized tomography of the mediastinum returned to normal.