

## Case Report

### Isolated ulcerative skin lesion caused by *Salmonella* Weltevreden

Prabha Desikan<sup>1</sup>, Yashwant Kumar<sup>4</sup>, Hemant K. Pande<sup>3</sup>, Aruna Jain<sup>2</sup>, Nikita Panwalkar<sup>1</sup>, Mayanka Verma<sup>1</sup>, Hemant G. Bramhne<sup>4</sup>, Anand Yadav<sup>3</sup>, Srikant Mohapatra<sup>3</sup>

<sup>1</sup>Department of Microbiology, Bhopal Memorial Hospital and Research Centre, Raisen Bypass Road, Karond, Bhopal. Madhya Pradesh-462 038 India

<sup>2</sup>Department of Pathology, Bhopal Memorial Hospital and Research Centre, Raisen Bypass Road, Karond, Bhopal. Madhya Pradesh-462 038 India

<sup>3</sup>Department of Cardiothoracic & Vascular Surgery, Bhopal Memorial Hospital and Research Centre, Raisen Bypass Road, Karond, Bhopal. Madhya Pradesh-462 038 India

<sup>4</sup>National Salmonella & Escherichia Centre, Central Research Institute, Kasauli, Himachal Pradesh, India-173204

#### Abstract

*Salmonella enterica* serovar Weltevreden is not a commonly isolated serotype in India. We report isolation of *Salmonella* Weltevreden, from an unusual site—an ulcer on the gluteal region of a patient who had undergone coronary artery bypass surgery. To our knowledge, *Salmonellae* have never been reported to cause isolated ulcerative lesions on the skin. This is the first report of an isolated ulcerative lesion on the skin caused by *Salmonella* Weltevreden. Our findings indicate that there may be modes of pathogenesis of *Salmonella* infections that we are yet unaware of. Further work and extensive reporting of all *Salmonella* infections are necessary to elucidate these mechanisms.

**Key words:** ulcerative, lesion, skin, *Salmonella*, Weltevreden

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#### Introduction

*Salmonella enterica* causes a variety of human infections worldwide. To date, 2,557 serovars of *S. enterica* have been identified, and many of them have been described as the cause of human infections [1]. However, only a few serovars are responsible for the majority of human infections, particularly *S. enterica* serovar Typhimurium and *S. enterica* serovar Enteritidis [2]. In India, the most common serovars causing human infections are *Salmonella* Typhi (73%) and *Salmonella* Paratyphi A (24%) among typhoidal serovars, and *Salmonella* Worthington (28.2%) and *Salmonella* Typhimurium (22.5%) among non-typhoidal serovars [3]. Strains of non typhoidal *Salmonella* usually cause an intestinal infection accompanied by diarrhoea, fever, and abdominal cramps that often last one week or longer. Some *Salmonellae* may cause septicemic disease with focal suppurative lesions, such as osteomyelitis, deep abscesses, endocarditis, pneumonia and meningitis. Antecedent gastroenteritis may or may not be present. We report isolation of *Salmonella* Weltevreden, from an unusual site—an ulcer on the gluteal region of a patient who had undergone coronary artery bypass surgery.

#### Case Report

A 38-year-old male was admitted on 27 September 2008, with complaints of chest pain and sweating. He was hypertensive and had a history of subarachnoid and intracerebral bleed five years prior to this episode. This had resulted in right-sided hemiparesis, which had been gradually resolved. There were no histories of diabetes mellitus, tuberculosis or asthma. He had no history of diarrhoea or prolonged fever. Clinical examination of the abdomen and respiratory tract showed no abnormality. The patient was conscious and oriented. Chest X-ray showed increased bronchovascular markings. Coronary angiography revealed double vessel disease. All haematological and biochemical investigations were within normal limits. The patient underwent coronary artery bypass surgery on 6 October 2008. Post-operatively he was in the intensive care unit (ICU) for six days on medications to improve cardiac functions, which were weaned off slowly, and after that he was transferred to the ward. On the second post operative day, he developed an ulcer in the left gluteal cleft. . . The ulcer was saucer shaped, with a sloping base and a variable depth of 1

- 1.5 cm. The diameter of the ulcer was 5 cm. The ulcer, which was not a pressure sore, was dressed daily.

A swab from the base of the ulcer was plated on blood agar and MacConkey agar and incubated at 37°C in the CO<sub>2</sub> incubator for 24 hours. Lactose non-fermenting colonies were isolated in pure growth, and Gram stain showed Gram negative bacilli which were motile. An API strip (Rapid ID 32 E, bioMerieux S.A.-France) was inoculated for detailed biochemical testing. The organism was identified as *Salmonella* species. The strain strongly agglutinated with agglutinating serum *Salmonella* Polyvalent-O, Group A-G (Remel Europe Ltd. Kent, U.K.) and did not agglutinate with any other agglutinating serum available in the laboratory. It was susceptible to Imipenem and Meropenem. The isolate was sent to the National *Salmonella* and *Escherichia* Centre, at the Central Research Institute, Kasauli, India, where it was identified as *Salmonella enterica* serotype Weltevreden, with the antigenic structure 3,10:r:z6. Blood cultures of the patient were sterile and no *Salmonella* was isolated from his stool.

The patient was discharged on Imipenem 500 mg, three times a day, intravenously, for 10 days. After the initial culture, a swab culture from the base of the wound was obtained when the patient came for follow-up two weeks later. There was no isolation of *Salmonella* Weltevreden from the second wound swab. Regular follow-up visits showed healing and dramatic reduction in the size of the ulcer.

## Discussion

To our knowledge, *Salmonellae* have never been reported to cause isolated ulcerative lesions on the skin. There was one report of postcholecystectomy surgical site infection by *S. enterica* serovar Weltevreden [4]. Bile spillage during surgery may have caused this infection. There was no such risk factor in the present case. This is the first report of isolation of *Salmonella* Weltevreden in pure growth from an isolated ulcerative lesion on the skin. It is possible that the physical stress of major cardiac surgery could have contributed to increased susceptibility to infections in the present case. The ulcer formed within two days of surgery, and it was not a pressure sore. The fact that the organism was isolated in pure culture from the ulcer without any other detectable focus of infection, and that there was a dramatic reduction in the size of the ulcer after treatment with Imipenem—one of the only two antibiotics that it was sensitive to—goes in favour of

a primary infection with *Salmonella* Weltevreden. The patient did not consent to a biopsy of the ulcer to confirm an infection, as opposed to colonization of the ulcer.

We were not able to trace the source of *Salmonella* Weltevreden.

This strain of *Salmonella* was multidrug resistant. It was susceptible only to Imipenem and Meropenem and resistant to Cefotaxime, Ciprofloxacin, Doxycycline Hydrochloride, Gentamycin, Ampicillin, Co-Trimoxazole, Amoxicillin/Clavulanic acid, Cefuroxime Sodium, Ceftriaxone, Amikacin, Ofloxacin, Ticarcillin/Clavulanic acid, Chloramphenicol, Ertapenem, Aztreonam, Cefdinir, Piperacillin/Tazobactam, Ceftazidime and Cefpirome. This may indicate a strain acquired from the hospital environment. This antibiotic susceptibility pattern is different from those reported earlier [2,5].

*Salmonella* Weltevreden is not a commonly isolated serotype in India. Out of 4,881 isolates of *Salmonellae* reported during 2003-2008 to the National *Salmonella* and *Escherichia* Centre, at the Central Research Institute, Kasauli, India, the national reference centre for *Salmonella*, only 171 isolates were identified as *Salmonella* Weltevreden. Of these, there were only 68 isolates from human samples.

Our findings indicate that there may be modes of pathogenesis of *Salmonella* infections that we are yet unaware of. Further work and extensive, detailed reporting of all *Salmonella* infections are necessary to elucidate these mechanisms.

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**Corresponding author**

Dr. Prabha Desikan  
Department of Microbiology, Bhopal Memorial  
Hospital and Research Centre

Raisen Bypass Road, Karond, Bhopal. Madhya  
Pradesh-462 038 India  
Tel.: +91 755 2742212 (Ext: 8810); Fax: + 91 755  
2748309  
Email: prabhadesikan@yahoo.com