

MULTIRESISTANT *SALMONELLA* TYPHIMURIUM PANOPHTALMIA IN AN IMMUNOCOMPETENT INFANT

by

P. KESTELYN, J. BOGAERTS & P. LEPAGE

Departments of Ophthalmology, Microbiology and Paediatrics,
Centre Hospitalier de Kigali, B.P. 979, Kigali, Rwanda

Introduction

Although focal localisations of nontyphoid *Salmonella* infection have been described for many years (1), endophthalmitis is a very rare complication of septicaemia due to *Salmonella*. To the best of our knowledge only three cases have been reported in the literature: two in apparently normal children (3,8) and one in an adult patient with chronic lymphocytic leukaemia (10). We herein report a case of metastatic ocular infection due to a multiresistant *Salmonella typhimurium* in a Rwandese child with a normal immunological status.

Case report

* An eleven-month-old male Rwandese infant was hospitalised in the paediatric department of the Centre Hospitalier de Kigali because of fever and loss of weight for more than one week, but without a history of diarrhoea. The child had been admitted two months earlier in the same ward with a diagnosis of malaria and cryptosporidiosis. Present examination revealed a febrile child (39°C) with anaemia, jaundice and mild hepatosplenomegaly. He was underweight but without severe malnutrition (11). Blood taken on admission showed: ESR 110 mm/hour; haemoglobin 6.8 g/dl; white cell count 17 300/mm³ with 39% polymorphonuclear cells and 61% lymphocytes. Other laboratory investigations included SGOT 84 U/L, SGPT 17 U/L and bilirubin 10 mg/dl (indirect bilirubin 0.9 mg/dl). The thick drop was positive for *Plasmodium falciparum*.

The child received whole blood transfusion and quinine intravenously, but no antibiotics. There was an initial favourable response, but on the fourth day the temperature rose again to 39°C and jaundice increased markedly. Blood was taken for culture.

On the seventh day the child developed severe swelling of the eyelids and proptosis of the right eye. Inspection of the outer eye showed oedema of the eyelids, chemosis of the conjunctiva, mixed injection and proptosis of the right eye. Slitlamp examination revealed marked corneal oedema, turbid aqueous humor and a purulent yellowish white exudate in the pupillary aperture, which rendered visualisation of the lens and the fundus impossible.

Applanation tonometry indicated an intraocular pressure of 50 mm Hg in the right eye and 10 mm Hg in the left eye. A diagnosis of metastatic endophthalmitis was made.

On the same day, *Salmonella typhimurium* was isolated from the blood culture taken three days earlier. As we suspected a hospital acquired infection with a multiresistant strain (2), cefotaxime 150 mg/kg/day in three divided doses intravenously was started immediately. Disc susceptibility testing revealed resistance to ampicillin, chloramphenicol, tetracycline, co-trimoxazole, gentamicin, streptomycin, kanamycin and sulphonamides, but sensitivity to cefotaxime. The patient's general status improved quickly and he was afebrile after two and a half days of cefotaxime treatment, which was continued for another ten days. Vision in the right eye was lost however, and an enucleation under general anaesthesia was performed on the tenth day. The same multiresistant *Salmonella typhimurium* was recovered from a vitreous aspirate of the enucleated eye. The child was discharged after 24 days of hospitalisation. Two stool samples, obtained after initiation of cefotaxime therapy, did not grow *Salmonella*.

Discussion

The emergence of multiresistant *Salmonella typhimurium* has become a major health problem in Kigali since 1982, causing a high case fatality-rate in hospitalised children. Most of our cases of *Salmonella* bacteraemia and focal infections were hospital acquired and occurred among children admitted for another severe illness (measles, malaria, dehydration and/or malnutrition (7)). It is highly probable that, although no *Salmonella* was isolated from his stools, this child was a carrier of the organism which became invasive during another illness such as malaria. Indeed, malaria is known to decrease immunity (5), and subjects with this disease have enhanced susceptibility to *Salmonella* infections (6).

The fact that the eye is an uncommon site for metastatic disease from salmonellosis, prompted us to consider the possibility of an immunodeficiency in this patient. Immunologic evaluation according to methods used in the frame of an ongoing study on the acquired immunodeficiency syndrome (9), showed no impairment of immunity. Lymphocyte subpopulations were determined by indirect immunofluorescence with monoclonal antibodies (Ortho Diagnostic Systems): total lymphocytes 10,200/mm with OKT3 = 59 %, OKT4 = 32 %, OKT8 = 24 % and OKT4/OKT8 ratio = 1.33. Tuberculin and candidin skin tests were both negative. Immunoglobulin levels determined by radial immunodiffusion were normal: IgG 2 890 mg/dl, IgA 77.7 mg/dl, IgM 483 mg/dl.

There were no clinical signs or symptoms of sickle cell anaemia, an extremely rare condition in Rwanda.

We believe that nontyphoid *Salmonella* must be considered as a rare but possible cause of bacterial panophthalmia, even in immunocompetent patients, especially in countries where these pathogens are frequently encountered. A common clinical feature in the four reported cases of *Salmonella* endophthalmitis was the presence of a purulent exudate in the

pupillary aperture, alternatively described as «a yellow-white mass behind the pupil» (3), as «white material behind the pupil» (8), or simply as a pupillary membrane (10).

Gross examination of the enucleated eye of our patient showed that the vitreous cavity was completely filled with pus. The lens was cataractous and embedded in a thick membrane which occluded the pupil. This may be related to rapid liquefaction of the vitreous by *Salmonella* toxins and overflow of purulent material from the vitreous cavity into the anterior segment. Light perception was lost in all four affected eyes despite adequate antibiotic therapy and enucleation was necessary in three cases. The poor outcome in these four cases confirms the generally held belief that the prognosis in endogenous panophthalmitis is usually very bad (4).

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