Yersinia - A Rarer Cause of Terminal Ileitis

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Received Date: June 29, 2016, Accepted Date: September 01, 2016, Published Date: September 08, 2016.

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Abstract

Yersinia enterocolitica is a rare cause of terminal ileitis which can be mistaken for Crohn’s disease. We present a case where Yersinia Enterocolitica was found to be the cause of a patient’s presentation but who had already received treatment for suspected IBD. Diagnosis was complicated by positive stool microbiology yet negative serology. We discuss laboratory testing and how these tests may not be straightforward in reaching the diagnosis. Lastly, we explore the link between Yersinia entercolitica infection and the development of IBD in infected patients.

Keywords: Yersinia; IBD; Crohn’s disease

Case Report

Introduction

Yersinia enterocolitica (Yenterocolitica) can cause significant gastrointestinal disease but may also mimic other diseases that affect the terminal ileum such as Crohn's disease (CD) and tuberculosis (TB) [1-3]. We describe an unexpected case of Y. enterocolitica ileitis and review the literature regarding its management and long-term gastrointestinal sequela.

Case Report

A previously healthy 42 year old male was admitted to hospital with a five week history of fever, weight loss, colicky right-sided abdominal pain and loose non-bloody stool. Other than a trip to France there was no recent travel history of note nor had any close family members been unwell. He had no relevant past medical history and no family history of inflammatory bowel disease (IBD). He smoked 5 cigarettes per day.

On admission his temperature was 38.2°C with normal cardiovascular and respiratory examination. His abdomen was soft but tender in the right iliac fossa. There was no organomegaly, no palpable masses nor was there any peri-anal disease, oral ulceration or joint inflammation.

Investigations showed a white cell count of 11.9 x 10⁹/L (NR 4-11), neutrophils of 9.3 x 10⁹/L (NR 1.5-7), lymphocytes of 2 x 10⁹/L (NR 1.2-3.5), a C-reactive protein of 36 mg/L (NR 0-4) suggestive of a bacterial infection or inflammatory process such as CD. The rest of his blood tests were normal. Abdominal computed tomography (CT) scanning with contrast (Figure 1) showed inflammatory changes of the terminal ileum and proximal ascending colon with enlarged local mesenteric nodes. Ileo-colonoscopy confirmed an inflamed terminal ileum with aphthous ulceration whilst the colon appeared macroscopically normal (Figure 2). ATB interferon gamma release...
O:5,27, O:8, O:9, and O:13 [11]. It is an infection which tends to occur predominantly in cooler climates; found to be much more common in northern Europe, Scandinavia, and Japan [12].

Following an incubation period of 4-7 days, infection may result in mucosal ulceration usually occurring in the terminal ileum and ascending colon. This leads to the development of necrotic lesions in peyer's patches and mesenteric lymph node enlargement resulting in a terminal ileitis, mesenteric lymphadenitis, and clinical features often described as “pseudoappendicitis”[13,14]. Most patients with \textit{Yenterococitica} infection are symptomatic. The most common clinical presentation of infection is low-grade fever and abdominal pain lasting 1-3 weeks. Diarrhoea may be bloody in severe cases. Vomiting is present in approximately 15-40% of cases. Extra intestinal features of disease may include cellulitis, pyomyositis, osteomyelitis, pneumonia, lung abscess, meningitis, or glomerulonephritis [15-18]. Post-infectious complications include reactive arthropathy and erythema nodosum [19]. Asymptomatic infection may also occur [20].

Yersiniosis is usually either self-limiting or responsive to antibiotics. As it is β-lactamase producing, quinolones, tetracycline or ciprofloxacin are recommended as first line treatments. Re-infection is possible [20].

**Discussion**

Although infection with \textit{Yenterococitica} is an accepted differential for terminal ileitis, \textit{Yenterocolitis} is an uncommon diagnosis in clinical practice, certainly in the UK. Only around 50 cases of \textit{Yenterococitica} are diagnosed each year in England and the proportion of these that have endoscopic or radiological evidence of terminal ileitis is unknown [4].

The genus \textit{Yersinia} belongs to the family of Enterobacteriaceae and comprises 11 species. Of these only three, \textit{Ypestis}, \textit{Ypsedotuberculosis} and some \textit{Yenterocolitica} are human pathogens [5]. \textit{Yenterocolitica} is a zoonotic pathogen first reported by McVer and Picke, in 1934 [6].

Human infection occurs after ingestion of microorganisms in contaminated food. Common animal reservoirs include pigs, dogs, cats, and cows [7]. Objective evidence for food-borne outbreaks of \textit{Yenterococitica} is rare, and most infections are sporadic [8,9]. Due to the lack of risk factors of a suspected source this is most likely the case in our patient. Although faecal-oral transmission among humans has not been proven, transmission has been attributed to direct inoculation through blood transfusions and can be transmitted from mother to newborn infant [8,10].

More than 60 serotypes of \textit{Yenterocolitica} have been described. The serotypes most clearly pathogenic to humans include O:3, 0:5,27, 0:8, 0:9, and 0:13 [11]. It is an infection which tends to occur predominantly in cooler climates; found to be much more common in northern Europe, Scandinavia, and Japan [12].

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Even following eradication of Yersinia, gastrointestinal symptoms remain common for several months. A Norwegian study of 371 patients over a 10-year period showed that readmission rates were 35% (with 20% of patients admitted 3 or more times), whilst chronic abdominal pain occurred in 20% and loose stool or steatorrhoea in 20%. Patients have an increased risk of developing irritable bowel syndrome up to one year after infection [21,22].

Our case is rare in that his infection was confirmed by routine faecal cultures but serology for common Y. enterocolitica types was negative on two separate occasions. There are a number of reasons why this might have been so. Firstly, there are no consensus guidelines on exactly how the infection should be diagnosed so culture of faeces remains the gold standard test. In the United States, serology is used rarely because of the absence of sufficient guidelines for interpretation of agglutinin titres. Secondly, serology has the disadvantage in that antibody titres are detectable only after one to two weeks. Thirdly, there are a number of agglutination techniques to confirm serotypes which vary in sensitivity and specificity. Lastly, serological diagnosis of Y. enterocolitica has been reported to be multifactorial and therefore there is the need for agglutinin titres to be interpreted on an individual basis. The patient’s age, underlying disease and the antibiotics and immunosuppressive agents being administered may affect interpretation [23,24].

There is also some evidence to suggest that Y. enterocolitica infection may increase the risk of subsequent development of IBD. An association between Y. enterocolitica infection and ulcerative colitis (UC) was suggested 30 years ago, and a connection with CD may also exist. For example, there have been reports of IBD diagnosed at laparotomy in individuals in whom yersinia was isolated from faecal samples or who had positive serology [25]. Furthermore Y. enterocolitica DNA has been detected in the histology of colonic resections and mesenteric lymph nodes in a series of CD cases [26]. A case control study showed that the incidence of IBD was higher in patients with positive Y. enterocolitica serology than in the antibody negative group [25]. However, the incidence of concurrent infections in patients who have a relapse of IBD is reported to vary widely and may well be influenced by the enthusiasm with which the identification of an infective source is investigated [27].

In conclusion, Y. enterocolitica remains an important part of the differential diagnosis of patients presenting with terminal ileitis. Stool cultures will identify the organism and although in our case, serology was negative on two occasions, serology for common types is confirmatory. Stool cultures are therefore essential even if the diagnosis of IBD seems clear-cut. Following treatment with antibiotics, symptoms can take several months to settle. In cases of severe ileitis we suggest that a repeat ileo-colonoscopy be used in antibiotic, symptoms can take several months to settle. In cases of types is confirmatory. Stool cultures are therefore essential even if the absence of sufficient guidelines for interpretation of agglutinin titres. Secondly, serology has the disadvantage in that antibody titres are detectable only after one to two weeks. Thirdly, there are a number of agglutination techniques to confirm serotypes which vary in sensitivity and specificity. Lastly, serological diagnosis of Y. enterocolitica has been reported to be multifactorial and therefore there is the need for agglutinin titres to be interpreted on an individual basis. The patient’s age, underlying disease and the antibiotics and immunosuppressive agents being administered may affect interpretation [23,24].

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References: