CORRELATION OF HISTOLOGICAL FINDINGS WITH BACTERIAL CULTURE IN CHILDREN WITH HELICOBACTER PYLORI GASTRITIS

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Abstract. The correct diagnosis and effective treatment of Helicobacter pylori (H pylori) gastric infection are essential in controlling this condition. The methods available have both advantages and limitations related to factors such as the level of technical difficulty, costs and extensive accessibility in hospitals. The bacterial culture from the gastric biopsy is the gold standard technique and recommended for antibiotic susceptibility tests. Many patients investigated for H. Pylori infection have been taking antibiotics or following a non steroidal anti-inflammatory treatment beforehand. These factors influenced the culture.

We present the case of a 15-year-old girl with continuous pain in the upper abdomen that woke her in the early hours of the morning for several months, and nausea. She also has a psychiatric condition, having attempted suicide repeatedly. This case report presents some of the most relevant diagnostic methods for H pylori infection, as well as the influences from previously followed treatments, environmental factors (i.e. smoking) and conditions which influenced the grows colonies. In the case of a negative culture and in the absence of response to the empirical therapy based on current antibiotics (amoxicillin, clarithromycin, metronidazole), we consider it is useful to use other methods when it comes to detecting the primary antibiotic resistance.

Keywords: Helicobacter pylori culture, antibiotic resistance

Introduction

The correct diagnosis and effective treatment of H pylori gastric infection are essential in controlling this entity, characterized by a high rate of prevalence worldwide and linked with chronic gastritis, gastric atrophy and cancer.[1] The methods available have both advantages and limitations related to factors such as the level of technical difficulty, costs and extensive accessibility in hospitals. The bacterial culture from the gastric biopsy is the gold standard technique and recommended for antibiotic susceptibility tests. The sensitivity of bacteria isolation has been reported to vary greatly among laboratories because it is very fastidious in nature. Even the experienced laboratories recover the organism from only 50 to 70% of infected biopsies.[2]

Aim

The purpose of this case report is to underline the difficulties in the realization of the H pylori culture, the factors that influenced the culture and to present some of the most relevant diagnostic methods of H pylori infection.

Case report

We aim to analyze the case of a 15-year-old girl with nagging pain in the upper abdomen that often woke her in the early hours of the morning, for one month. Nausea is also mentioned, on average of 2-3 episodes/week. The patient suffered from chronic gastritis and was H pylori positive 6 months previous to this hospitalization. She was treated before with sequential therapy: an esomeprazole plus amoxicillin 1g, both given twice daily for the first 5 days, followed by triple therapy- esomeprazole, clarithromycin 500mg and metronidazole, all given twice daily, for another 5 days. No other check-up followed after the previous hospital discharge. For a few months the patient was asymptomatic. In terms of family history, no sign of gastric suffering was reported. She also presented with
psychiatric condition, with repeated suicide attempts. She denies taking any drugs that could explain the occurrence of symptoms and does not remember of any recent infection.


H pylori antigen in stool specimen was positive as well serology. On endoscopy, antral nodularity was found. Rapid urease test was positive and H pylori culture of gastric biopsy (antrum) was negative. The organism was found in the histological section beside the mononuclear infiltration.

We prescribed her a rescue eradication regimen for H pylori with IPP, Tinidazole and Levofloxacin, as antibiotic resistance in our geographic area continues to be a rather challenging issue Several recommendations were made as to the hygienic and dietetic treatment (avoiding smoking). Treatment compliance plays a major role in predicting therapeutic outcome. A follow-up was scheduled at two months after her demission.

Discussions

The Maastricht Consensus Report[3] recommends H pylori culture for performing antibiotic susceptibility testing if primary resistance to Clarithromycin is higher than 20% or after failure of second line – therapy. As the prevalence of antibiotic resistance increases globally, there is a strong argument for performing culture and sensitivity testing after the first treatment failure (to prevent emergence of double resistance to Clarithromycin and Metronidazole) and certainly after the second; indeed, some would argue that it should be performed at the initial diagnosis in areas of high resistance prevalence.[4] Despite its long use, culture remains a challenge because of the fastidious nature of the bacterium, with particular growth requirements regarding environment and atmosphere.[5] Altering the pH, the proton pump inhibitors (PPIs) indirectly interfere with H pylori distribution in the stomach. The antral part has been found to be the most affected part of the stomach by PPIs as H pylori almost disappears from this niche. To avoid false negative results, it is recommended not to consume these drugs 2 weeks prior to endoscopy.[6] Smoking has been identified by several studies to be an important factor associated with treatment failure.[7] In our case, the adolescent denied the use of IPPs and antibiotics before being accepted to the hospital. She also denied smoking, but the information which she offered us may not be true. It has been established that H pylori has patchy distribution in the stomach. It has also been discovered that the corpus may be the only site which remains positive despite the consumption of antisecretory drugs. In our case we took two biopsies from the antrum for H pylori culture (Figure 1). This could be adjusted by taking another one/two samples from the gastric body as well, in an attempt to improve the culture success rate.

We prescribed pr patient a rescue eradication regimen with IPP, Tinidazole and Levofloxacin, because we had scarce information on antibiotic resistance in our geographical area. In particular, primary Clarithromycin resistance is regarded as the main factor that affects the treatment’s efficacy, reducing the success rate of standard triple therapies to mean values of 18-44%.[8] However considering the difficulty of H pylori culture development, this technique could be completed by molecular methods (as FISH or PCR from biopsies) which do not require strict conditions of biopsy specimen transport and can be used to detect the point mutation associated with the Clarithromycin resistance, the main antibiotic responsible for decreasing the eradication rate.[9]

Conclusions

Several factors have been found to affect the efficacy of therapies: bacterial resistance to antibiotics, compliance to therapy, bacterial load in the stomach, smoking. In the case of a negative culture and in the absence of response to the empirical therapy based on current antibiotics (Amoxicillin, Clarithromycin, Metronidazole), we consider it useful to use other methods when it comes to detecting the primary resistance of antibiotics (genotypic analysis).

References

