

## An old bug but still fully alive to be a challenge: *Helicobacter pylori*

The intriguing term “serendipity” (from the ancient name of Sri-Lanka) indicates the case of somebody, who, proceeding unaware along his/her own road, suddenly faces something unexpected. Serendipitous cases are obviously abundant in medical research history: the case of the Nobel Prize Baruch S Blumberg hitting the hepatitis B Virus while studying lipoproteins is just one example in a thousand. Yet, serendipity is a double-sword word, somewhat implying that one’s achievement is more of luck, than of systematic work. Be as it may, around the Easter time of 1982 a bout of serendipity hit the city of Perth (Western Australia), a glittering resort lazily nestling around the Swan River mouth. A gastroenterologist and his pathologist at the Royal Perth Hospital were being intrigued by the finding of some “curved” bugs in gastric biopsies, but their enthusiasm had been frustrated by the bugs refusing to grow into standard laboratory dishes. On Easter time, Marshall and Warren, lured by the sweet Australian fall, took some days off and forgot about their dishes. On their way back, cursing their forgetfulness, they were being prepared to throw the rotten dishes into the garbage... but in fact they found them crowded by happily viable bugs: in all likelihood, one of the germs’ requirements was a longer stay in the dish, and the Easter vacations had inadvertently fulfilled the need. From those pioneering times, many things have dramatically changed, beginning from the positioning of the “curved bugs” into the comprehensive category of the “Helicobacters”, where the Marshall’s *Helicobacter Pylori* is in the good company of many siblings, including the well-known *Helicobacter Hepaticus*. We have arbitrarily selected two crucial points to discuss, with regard to H Pylori (HP): its epidemiology and treatment strategies, its pathogenetic potential.

H Pylori is now listed as one of the most diffuse infections, with 2 thirds of the global population estimated to be carriers, and the frequency of positivity of human ulcers attaining 100%. In recent years, such overwhelming infection tide has led physicians to try a whole arsenal of antibiotics, only to almost invariably hit the bottom line of resistance. Penicillin derivatives such as clarithromycin, quinolones, and imidazole derivatives like metronidazole have all raised a relatively short-lived hope. Most recently, the old bismuth has been revitalized: as a component in a single-capsule formulation containing bismuth-subcitrate, potassium, metronidazole, and tetracycline has fared well thanks to its inability to provoke resistance. Yet, we have to wait longer to ascertain these results.

Notably, some *Helicobacters* can elicit inflammation trespassing the boundaries of their initial location. So, the inflammation-producing germs may lose their ties with the initially infected organ, to become “systemic” trans-organ pathogens. This is often granted by the germ’s mutated genome coding for an immunogenic (CagA) HP specific protein. CagA/antibody complexes can react with vascular wall cells to boost inflammation and obstruction; should this happen at the heart vasculature, ischemic disease and even infarction can ensue, as proven by others and

ourselves, making HP rank first in the list of the “unconventional” causes of vascular heart disease. Rosacea and thyroiditis have been attributed to the inflammogenic potential of HP as well. Last but not at all least, comes a pathology which gives an idea of how far can the HP infection strike: the mid-brain. Some Parkinson’s- like syndromes are now thought to originate from the upper digestive tract: facing an infection, the enteric nervous system is supposed to release the defensive prion-like protein alpha-synuclein. If not efficiently cleared from the mid-brain, this protein is suspected to blur signal transmissions and trigger Parkinson’s. By-stander or culprit, HP is one of the agents found in these infections! Once dormant in Marshall’s dishes, the HP bugs are now known to at least attack gastric, heart, thyroid, and nervous cells: enough to advise physicians to smartly refrain from dormancy.

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## **Publication**

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