

MORPHOLOGICAL CHANGES AND OUTER MEMBRANE PROTEIN PATTERNS IN HELICOBACTER PYLORI DURING CONVERSION FROM BACILLARY TO COCCOID FORM

B. Citterio¹, A. Casaroli¹, L. Pierfelici¹, M. Battistelli², E. Falcieri^{2,3}, W. Baffone¹

¹Istituto di Scienze Tossicologiche Igienistiche ed Ambientali, Università degli Studi di Urbino, Urbino, Italy;

²Istituto di Scienze morfologiche, Università degli Studi di Urbino, Campus Scientifico, Urbino, Italy;

³ITOI-CNR, Istituti Ortopedici Rizzoli, Bologna, Italy

SUMMARY

Conversion from bacillary to fully coccoid form via an intermediate U- and V-shaped form has been described in prolonged cultures of H. pylori. This morphological transformation may be the expression of transitory adaptation to a particular environment and may play an important role in antibiotic resistance and the difficulty to eradicate the pathogen.

The aim of this study was to evaluate morphological and outer membrane protein changes in H. pylori during ageing-induced conversion to coccoid morphology.

We used two H. pylori strains (the reference NCTC 11639 and a fresh clinical isolate) cultivated in microaerophilic environment at 37°C, monitoring their morphological and biochemical evolutions for 11 days. Microscopic examination revealed the passage from spiral to U- and V-shaped form after 5-8 days of incubation, the conversion to coccoid form and the entry into viable but non-culturable state (VBNC) between days 9 and 11. Protein pattern difference appeared at 97.4 to 45 and 30 kDa molecular weight. Biochemical tests demonstrated not only a modification of outer membrane protein profiles, but also an intra-specific variability by comparison between the two analysed strains. Our findings suggest that structural and outer membrane changes associated with coccoid transformation represent a typical response in H. pylori and may constitute a survival strategy in adverse environmental conditions.

KEY WORDS: H. pylori, VBNC state, Morphology, SDS-PAGE protein profile

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