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REVIEW ARTICLE

The significance of *Sarcina* in routine surgical pathology practice

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Sarcina was first described by Goodsir. The appearance of this bacterium is so characteristic that the diagnosis can be made on light microscopy. Although the original description of *Sarcina* was made more than 150 years ago, little is known about its role in various human diseases. This study was undertaken with the aim to analyze critically the reason for this sudden recent interest in human *Sarcina* infection. The results indicate that *Sarcina* is a histopathological marker of functional or anatomical causes of gastric stasis, and has a possible association with life-threatening emphysematous gastritis. Hence, its documentation in the final report is warranted as the patient might need further work-up.

Key words: Sarcina; gastroparesis; biopsy.

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Sarcina was first described by Goodsir more than 150 years ago (1). He believed that its natural habitat was stomach and hence named it *Sarcina ventriculi* (Latin: *ventriculus* means belly). His belief was based upon the observation of a characteristic vomiting (sarcinous vomiting) in animals and the detection of *Sarcina* in the frothy vomitus. *Sarcina* is a strict anaerobe present in the soil and exhibits a fermentative metabolism. It is known to thrive even in acidic environments (at pH of 1) (2–4). It is a gram-positive coccus measuring 1.2–2 μm and has a peculiar arrangement of tetrads and octets (Latin: *Sarcina* means a marching pack carried by Roman legionaries). This appearance is so characteristic that the diagnosis can be made on light microscopy. The 16s rRNA sequencing data of all gram-positive anaerobic cocci have shown that the Genus *Sarcina* comes under *Clostridium* cluster I. *Clostridium* cluster I harbors most of the clinically significant clostridia, including *Sarcina maxima* and *S. ventriculi* (5). Recently, Lawson and Rainey have proposed that *S. maxima* and *S. ventriculi* should be transferred to the genus *Clostridium* as *Clostridium maximum comb. nov.* and *Clostridium ventriculi comb. nov.* respectively (6). This proposal is based upon the evidence from polyphasic taxonomic data, which indicate that the genus *Clostridium* comprises a collection of very heterogeneous species. *Sarcina ventriculi* is the species which forms a part of bacterial flora in the skin and large intestine of human beings (7). The primary reason *S. ventriculi* is regarded with caution in human beings is because of the well-established veterinary literature demonstrating a not uncommon lethal disease called 'abomasal bloat' found in livestock (8–10). Its role as a human pathogen is, however, not well established. In the recent past, there has been a sudden surge in the number of publications with respect to human *Sarcina* infection (Fig. 1). Hence, this study was undertaken with the aim to analyze critically the reason for this sudden interest in human *Sarcina* infection among researchers from the year 2000–2015.

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MATERIALS AND METHODS

For data collection, the online search engines used were Google, Google Scholar, PubMed, Embase, Medline, Web of Knowledge, Scopus, NHS evidence, TRIP database and Cochrane library. A literature search was made using