Characterisation of anaerobic cocci in the diagnostic laboratory

At present, the classification of anaerobic cocci is confused and confusing. In a recent paper we reviewed the development of classification schemes for these organisms and drew attention to the difficulties encountered by diagnostic laboratories that attempt to characterise anaerobic cocci without the use of specialised techniques such as gas-liquid chromatography. There are two main problems:

1. There is no reliable standard test for differentiating between Peptococcus and Peptostreptococcus; in our experience, the morphology as determined by Gram stain is variable and novobioicin sensitivity or resistance is not a good differentiating test.

In a study of 30 strains of Peptostreptococcus anaerobius (identified for this purpose by the production of iso-caproic acid on gas-liquid chromatography), 20% were resistant to novobioicin (5 μg disc).

2. Many strains of anaerobic cocci are biochemically inert and cannot be accurately speoted.

Thus our present schemes are unreliable or unhelpful, and there is evidence that, in any case, they may be based on unsound definitions. A recent paper even casts doubt on the validity of the basic definition of Peptococcus and Peptostreptococcus. Until the taxonomic relations within the anaerobic cocci have been finally elucidated, we believe that it is important for the diagnostic laboratory to have a simple identification scheme that allows at least some characterisation of clinical isolates in an easily understood manner by means of simple and reliable tests. In studies on anaerobic cocci of clinical interest over many years, the following points have become clear:

1. The Gram stain reaction itself is of value and correlates well with sensitivity (Gram positive) and resistance (Gram negative) to vancomycin (5 μg disc).

2. Morphology is variable and inconsistent.

3. Strains of anaerobic cocci can be readily subdivided into "saccharolytic" and "asaccharolytic," by means of a glucose fermentation test.4

4. The strains of the organism presently labelled Peptostreptococcus anaerobius (as defined by production of iso-caproic acid on gas-liquid chromatography) are often clinical isolates and form a clearly defined group that can be reliably and easily characterised in the diagnostic laboratory by their susceptibility to "liquid" (polyanethol sulphonate).

We therefore suggest that because of the present highly confused state of the classification of anaerobic cocci of clinical interest, the diagnostic laboratory should "return to basics." We propose the following simple but radically different approach to the identification of these organisms. We have divided anaerobic cocci of clinical interest (as previously defined) into four groups as follows:

- **Group A:** Liquidose sensitive, glucose fermenting, Gram positive anaerobic cocci (this would correspond to Peptostreptococcus anaerobius as defined in the VPI manual).
- **Group B:** Liquidose resistant, glucose fermenting, Gram positive anaerobic cocci
- **Group C:** Non-fermenting, liquidose resistant, Gram positive anaerobic cocci
- **Group D:** Gram negative anaerobic cocci

The proposed identification scheme is shown in the figure.

This scheme has the merit of being simple and reliable, without the requirement for complex procedures and utilising only commonly used simple tests. We are aware that such a scheme is likely to be criticised as being simplistic and of doubtful taxonomic validity. To our critics, we would submit that our scheme can form a valid basis for further work and further refinement (for example, Group C could be further subdivided into two subgroups on the basis of the indole reaction), can be applied easily in any diagnostic laboratory, and can be readily understood by clinical colleagues. Present classification schemes do not fulfil all of these criteria.

**References**


**Book reviews**


This volume contains the Proceedings of one of the special Symposia that formed part of the programme of the 9th International Congress of Neuropathology held in Vienna in September 1982. The contributors are therefore all accredited experts in their respective fields. The topics dealt with include immunological models and aspects of diseases of the central nervous system, demyelination of inflammatory type, and demyelinating disease in general.
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*J Clin Pathol* 1984 37: 1197
doi: 10.1136/jcp.37.10.1197-a

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