

PadoSero

Serotypes of *Aggregatibacter actinomycetemcomitans* (Aa)

– Diagnostic for a therapy personalized on Aa –

Aggregatibacter actinomycetemcomitans (Aa) is one of the key bacteria in the etiology of periodontitis. With **PadoSero**, we focus on the subtypes (serotypes) of this bacterial species to enable differentiated treatment.

The classification of Aa into six and seven serotypes a to g, is based on the one hand on the structural properties of polysaccharide antigens (Takada et al., 2010), the serotype b can be further classified into different clones, including the highly virulent clone JP2 (Haubek et al., 2007) on the other hand, on a phylogenetic analysis with classification in six clades of a to f (Kittichotirat et al., 2016). This study suggests that the different clades have evolved different constellations of genes that reflect different adaptation strategies to the human oral cavity.

The pathogenicity of serotypes of *Aggregatibacter actinomycetemcomitans* is largely due to the effect of specific virulence factors on the immune system and tissue breakdown. A comparative study of coding genes from multiple virulence factors shows that serotype b is mainly associated with disease and serotype a associated with health (Umeda et al. 2013).

The distribution patterns of serotypes among humans

differ according to the geographic location, ethnic status and periodontal conditions of the patients (Brígido et al., 2014). The serotypes a, b and c are globally dominant, while the serotypes d, e and f are rare (Kim et al., 2009). Serotype a was detected with a prevalence of 25% (Jentsch et al., 2012). However, serotypes can be transmitted through close contacts (Haubek et al., 2007).

Each serotype can be treated mechanically by subgingival instrumentation and/or with different antibiotics. Despite its effectiveness, antibiotic administration should be reduced as it can kill healthy bacteria, destroy the biofilm and make other bacteria resistant. For example, a recent study in the United Kingdom showed that several serotypes of Aa were 100% resistant to penicillin and metronidazole (Akrivopoulou et al., 2017). For these reasons, we have compiled therapy recommendations that strongly limit the use of antibiotics.

Therapy recommendations

To achieve the best possible effect, always administer adjuvant antibiotics immediately after the mechanical therapy.

Serotype a – subgingival instrumentation + monitoring

No antibiotic therapy indicated since serotype a belongs to the „green complex“ (Socransky et al. 1998). Generally not virulent (Kawamoto et al. 2009, Umeda et al. 2013) and associated with periodontally healthy patients. The control of the causal infection and inflammation control takes place by means of subgingival instrumentation.

Serotypes b and c – subgingival instrumentation, monitoring + antibiotics

Associated with a significant risk of coronary heart disease (Pietiäinen et al. 2018). Increased risk of alveolar bone loss (Melgar-Rodríguez et al. 2015).

Recommendation: Amoxicillin, 3 × 500 mg daily, 7 days

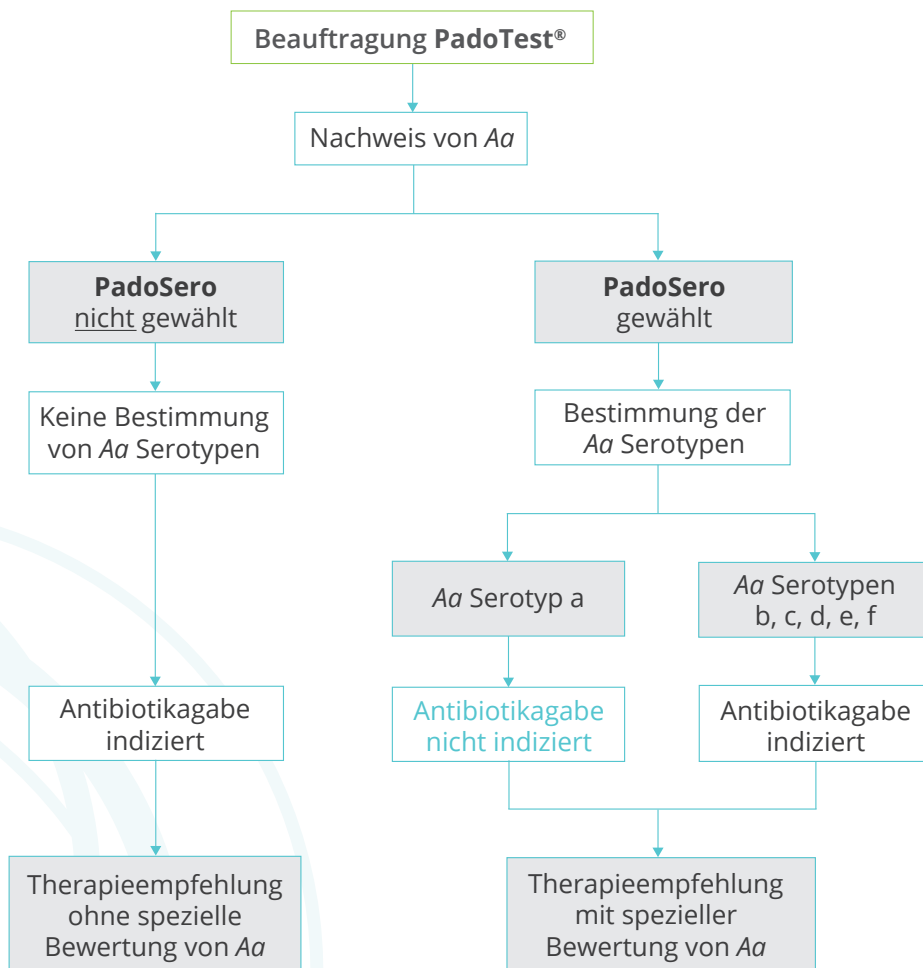
Serotypes d, e and f – subgingival instrumentation, monitoring + antibiotics

Due to a very low prevalence (Kim et al. 2009, Chen et al. 2010, Mínguez et al. 2014), a systemic antibiotic therapy is indicated only depending on the clinical picture.

Recommendation (for poor clinical condition): Amoxicillin, 3 × 500 mg daily, 7 days

Flowchart

PadoSero in presence of Aa



The option **PadoSero** is only charged in presence of Aa and can therefore be always selected!

Example of result for the serotype a

