

Involvement of Pantone-Valentine leukocidin-producing *Staphylococcus aureus* in staphylococcal skin diseases in patients in peri-urban Benin

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Introduction: *Staphylococcus aureus* is a pathogen that colonizes a large part of the general population and causes a wide spectrum of diseases. About 3% of *S. aureus* strains express a virulence factor called Pantone Valentine Leucocidin (PVL). This study aims to highlight the role of PVL in staphylococcal infections in a peri urban area of Benin.

Méthodologie

This is a study that focused on a cohort of 124 patients with staphylococcal diseases (wound, abscess, furuncle, osteomyelitis and pyomyositis) received at the "Siloé Reservoir" health center in Hlagba-ouassa, commune of Zogbodomè from November 2014 to December 2017. Data were collected retrospectively in 71 patients and prospectively and longitudinally in 53 patients. The profile of the 124 patients was established on the basis of sociodemographic, clinical, microbiological, hematological and immunological parameters. Then the immunological follow-up of the cohort of 53 patients (34 LPV+ and 19 LPV-) was performed weekly for 4 weeks on the basis of the following parameters: CRP, VS, NB, CD4. Translated with www.DeepL.com/Translator (free version)

Résultats

The patients were predominantly female with a sex ratio equal to 0.8 and the age group [1; 10 years] was the most represented, i.e. 68.55%. The age group [1 to 10 years] is the most affected regardless of the type of disease. The most common diseases are pyomyositis (42.74%), osteomyelitis (24.19%) and abscesses (20.97%). Before the medical consultation, 54.03% of the patients first resorted to traditional medicine to treat themselves and 10.28% resorted to probabilistic antibiotic therapy (Fig. 1).

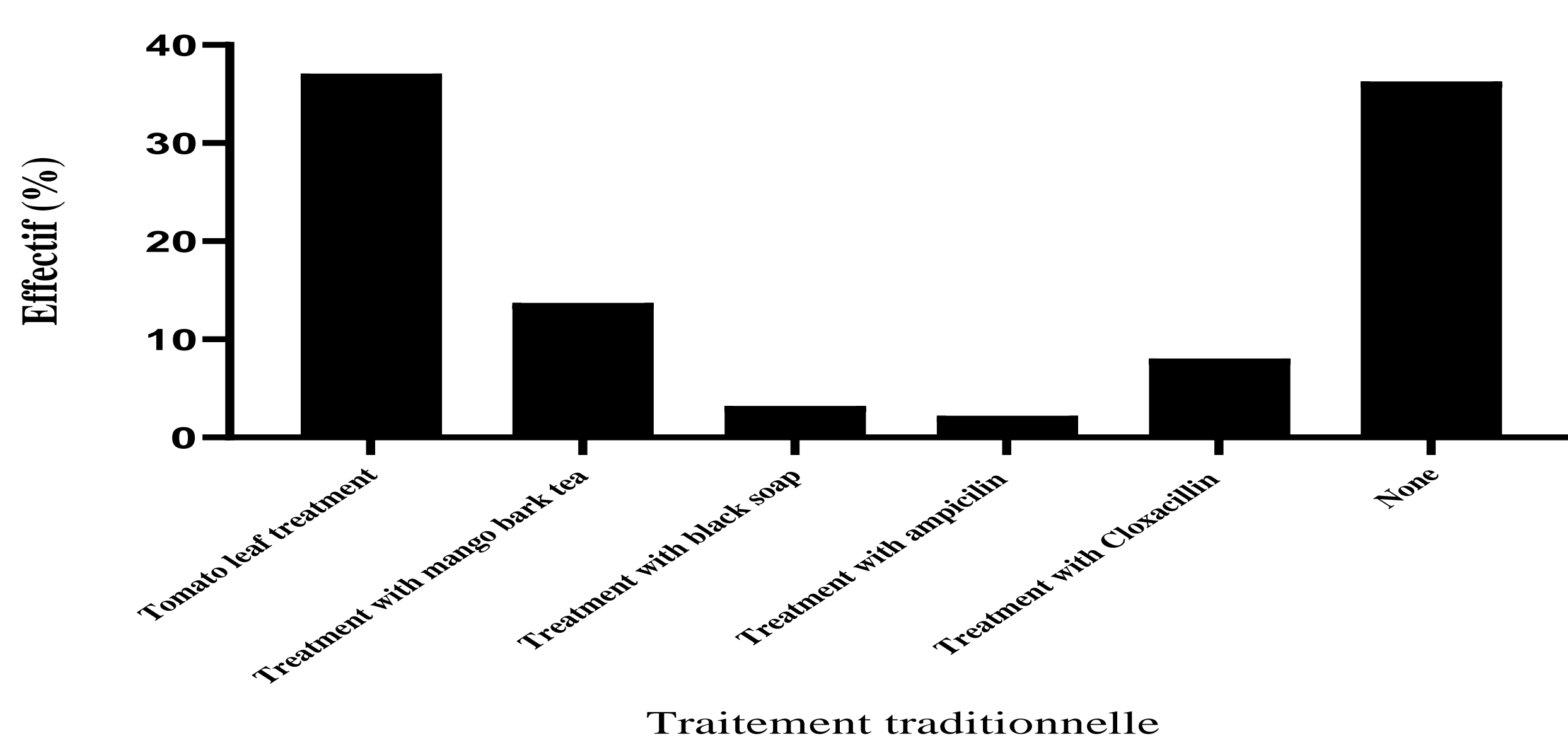


Fig 1: Distribution of patients according to treatment at home.

Bacterial species isolated according to the type of infection

Figure 2 shows that *Staphylococcus aureus* was isolated in 83.11% of the cases studied of which almost the majority of *Staphylococcus aureus* was isolated in pure culture in 100% of the pyomyositis cases. There was no significant difference between the bacterial strains according to the infections ($p > 0.9999$).

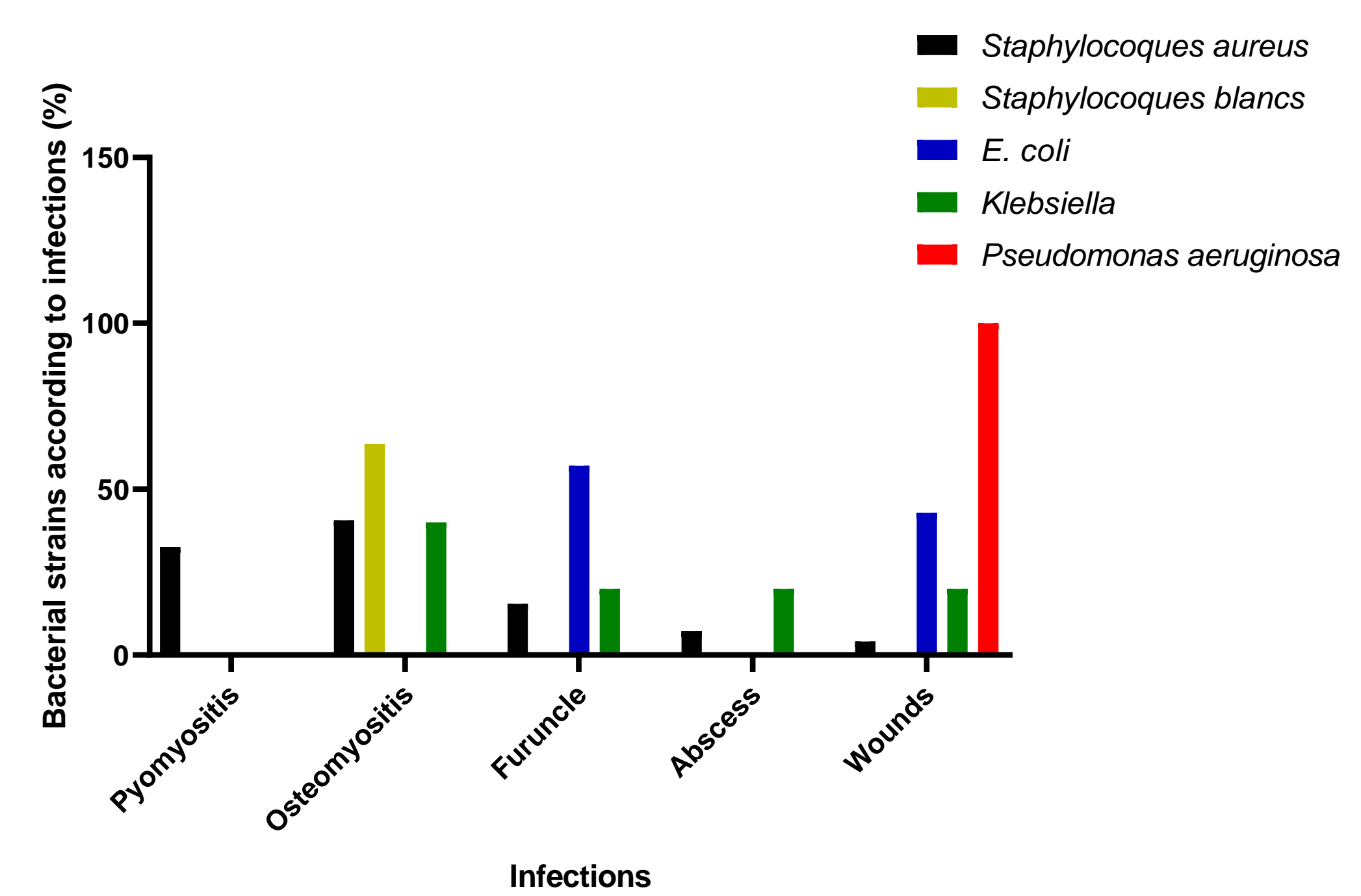


Figure 2: Distribution of bacterial strains according to infections.

29.61% of *Staphylococcus aureus* strains are resistant to the antibiotics tested, including 100% to Penicillin. 70.39% of *Staphylococcus aureus* strains are sensitive to the antibiotics tested, including 100% to Vancomycin and Ciprofloxacin. 91 strains of *S. aureus* out of 123 isolated produce Pantone-Valentine leucocidin (PVL), i.e. 73.98% of the strains tested. All PVL-producing *S. aureus* strains are sensitive to methicillin. While 40.63% of non LPV producing *S. aureus* strains are resistant to methicillin. There was no significant difference between methicillin-susceptible and methicillin-resistant *S. aureus* strains ($p > 0.9999$) according to the production of LPV. Translated with www.DeepL.com/Translator (free version)

The majority of patients were seronegative with a CRP level higher than 6mg/l at admission. Despite this seronegative result, we observed a depletion of T4 lymphocytes in most patients. The follow-up of the patients during four weeks showed a clear improvement of the immunological parameters in most of them. Even though the literature does not say much about this case, this indicates the impact of LPV on the immune system of LPV+ patients. Translated with www.DeepL.com/Translator (free version)

Conclusion

S. aureus producer of PVL plays a major role in staphylococcal infections in peri-urban areas in Benin. The presence of methicillin-sensitive strains suggests the loss of the horizontal transfer methicillin resistance gene.

Mots-Clés : *S. aureus*, LPV, staphylococcal skin infections, community, Benin.

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