

T. Ferry, C. Kolenda, T. Briot, S. Lustig, C. Batailler, G. Leboucher, F. Laurent on behalf of the Lyon BJI Study group

Hospices Civils de Lyon, France (corresponding author : tristan.ferry@univ-lyon1.fr)



AIM

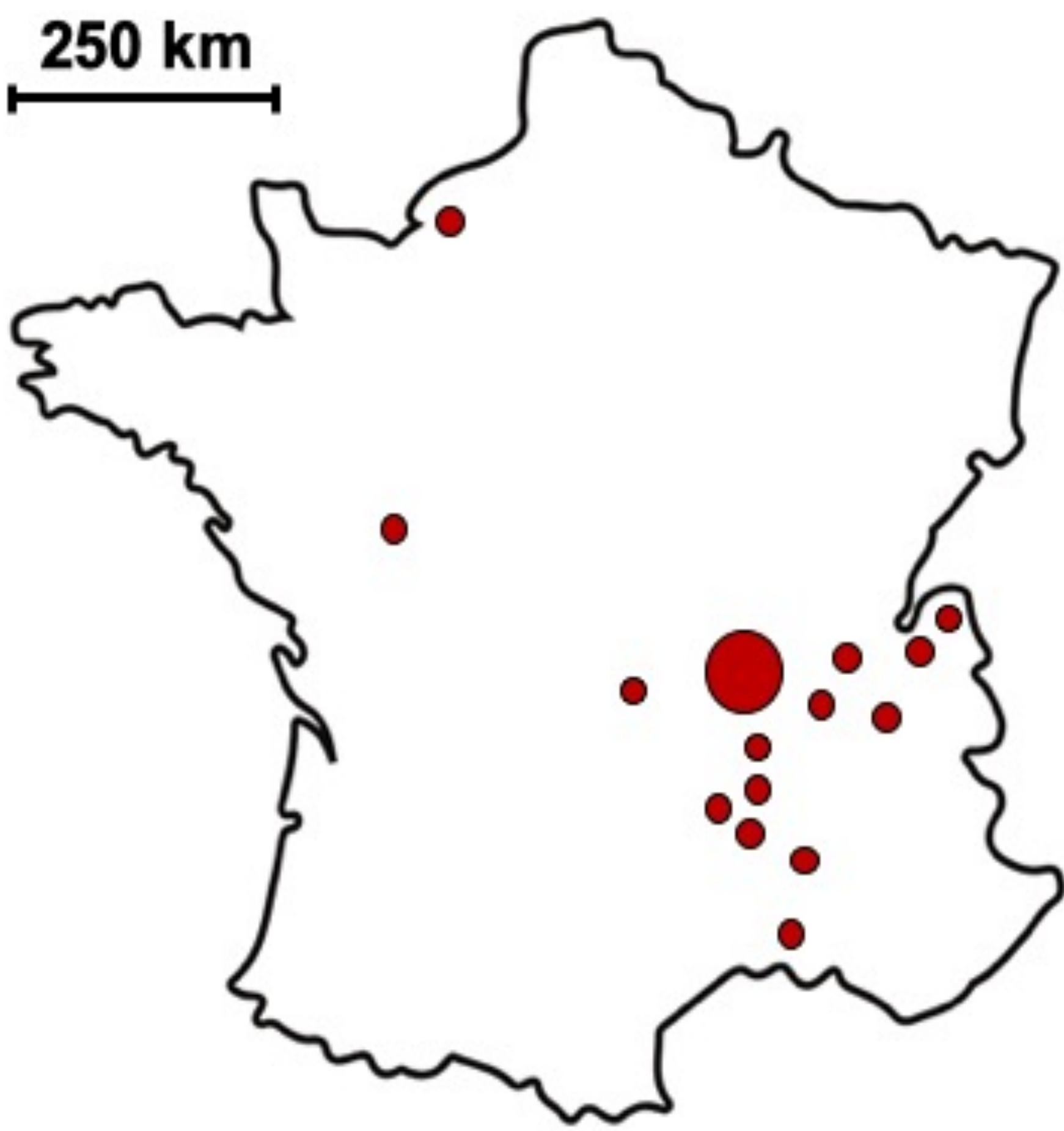
Phage therapy is a promising option in patients with bone and joint infections (BJI). Since 2009, the French health ministry labelled regional reference center for the management of complex BJI (CRIOAc). Since 2017, we implemented in CRIOAc Lyon a multidisciplinary group dedicated to develop phage therapy as salvage treatment for such patients.

METHODS

Prospective study, to collect the data from patients treated with phage therapy in our institution.

RESULTS

Twenty-one patients (median age 73 years), referred throughout the territory (Figure, Table), have been treated since 2017. Patients were selected during multidisciplinary meeting, in close interactions with the French health care authority, as phage therapy is only conceivable in France as salvage treatment. The most relevant indication was prosthetic joint infection (PJI; 16 patients), with implementation of a specific procedure called PhagoDAIR to perform phage therapy during Debridement Antibiotics and Implant Retention (DAIR) in patients with chronic infection, or administration under sonography (Figure). Other patients had osteomyelitis (n=1), spinal abscess (n=1), femoral nail infection (n=1). Two patients with vascular implant infection such as endocarditis were also treated, following the acquired experience in BJI. All patients were treated with an active phage cocktail tested on the patient’s strains (phagogram) before administration, that were finally prepared by our hospital pharmacist at the time of administration. Patients received phages targeting *S. aureus* (n=10), *P. aeruginosa* (n=8), *S. lugdunensis* (n=1) or *S. epidermidis* (n=1) purified by a French private company (n=18) or by the Queen Astrid military hospital (n=3). Four patients received phages also intravenously (Figure). For one patient infected with a pandrug-resistant *P. aeruginosa*, a unique European academic collaboration was needed to discover active phages, to identified and purified them, before treating the patient with success.



Number of patients	2017	2018	2019	2020	Total
Managed in CRIOAc Lyon	557	594	647	520	2318
For whom a phagogram was performed	7 (1.2%)	10 (1.7%)	17 (2.6%)	23 (4.4%)	57 (2.4%)
For whom phage therapy was done	4 (0.7%)	2 (0.3%)	8 (1.2%)	7 (1.3%)	21 (0.9%)



CONCLUSIONS

TedSupported by our activity of regional reference center, we implemented a phage therapy center in France. Based on our experience, identifying relevant clinical indications (such as PJI), and having multidisciplinary approach with international academic collaborations and interactions with national health authority and industry, are essential to go ahead and develop phage therapy and clinical trials in this field in a close future in each country.