

BACKGROUND

In Peru, syphilis disproportionately affects men who have sex with men (MSM) and male-to-female transgender women (TW) with prevalence rates as high as 30%^{1,2}. To our knowledge, there are no available data describing circulating strains of *T. pallidum* in Lima, Peru. We used the CDC subtyping scheme to identify *T. pallidum* circulating subtypes among MSM and TW from two STI clinics in Lima, Peru.

AIM:
 In this study, we set out to detect the most prevalent strains of *Treponema pallidum* using the CDC methodology in two STI Clinics in Lima, Peru

METHODS

A cohort of 401 MSM and TW were assessed for syphilis infection at baseline and quarterly with RPR (BD Macro-Vue, USA) and TPPA (Fujirebio, Japan) testing up to 24 months. A dacron swab was used to collect exudate from chancre-like lesions and placed into 500 µL of lysis buffer. DNA extraction was performed using QIAamp mini kit (Qiagen, Valencia, CA). Using specific primers for Tp47 region target, an aliquot of the DNA sample was amplified using conventional PCR. Subtyping of *T. pallidum* TP47 positives was performed using detection of number of 60-bp tandem repeats in the arp gene and analysis by RFLP of 3 tpr genes (TprE, G, J) according to CDC guidelines³.

FIGURE 1:

Typing Workflow

PCR screening Positive (Tp47 gene)

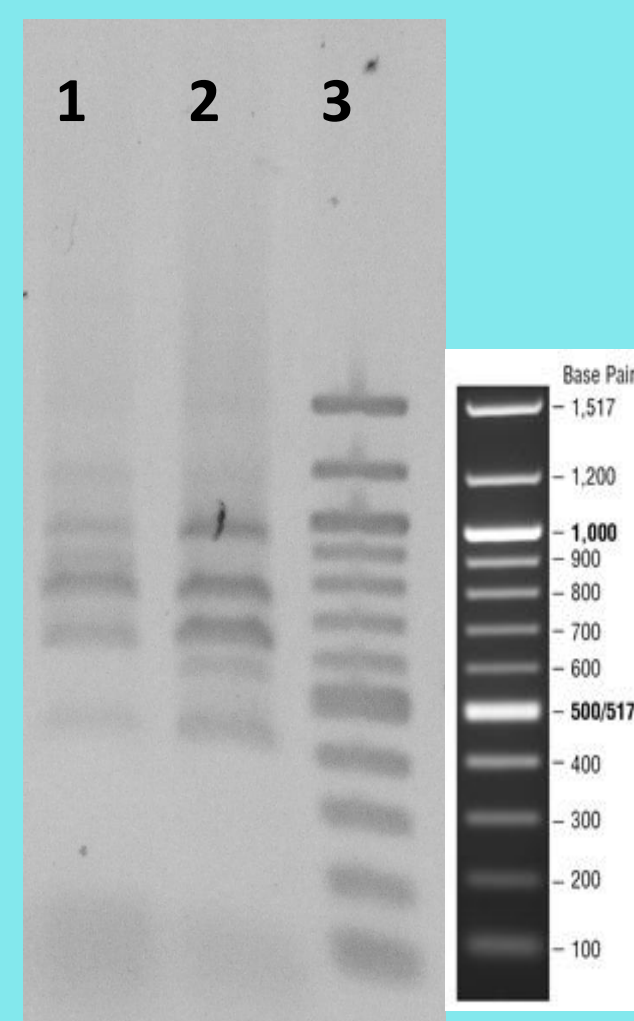
Typing

RFLP EGJ

#ARP

FIGURE 2:

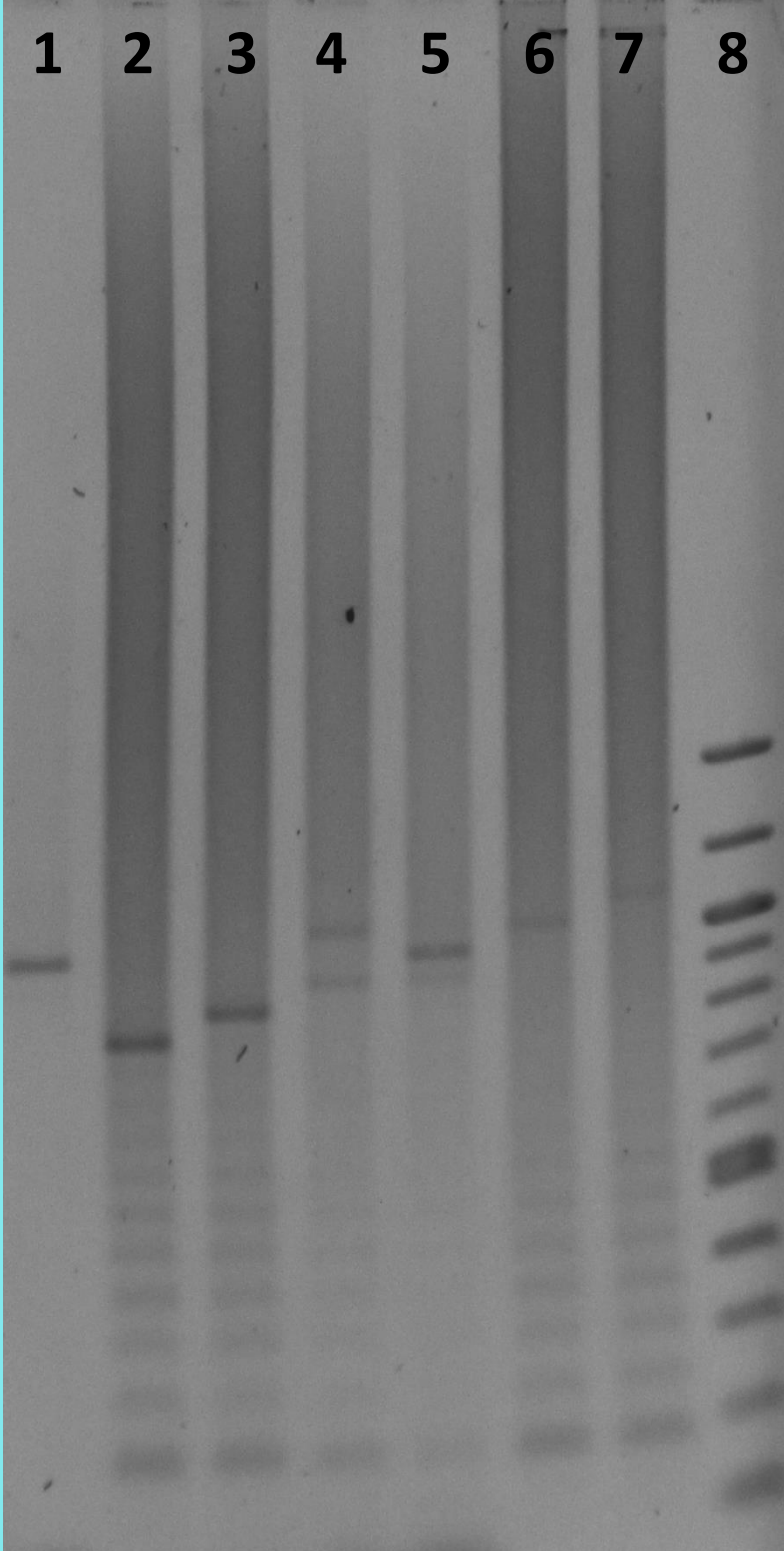
EGJ Typing



1. RFLP of EGJ gene of a sample – type d
2. RFLP of EGJ gene – type d (St14 strain)
3. Ladder 100bp (NEB)

FIGURE 3:

ARP typing



1. PCR of a sample. 14 ARP repeats.
2. Control ARP = 11 repeats
3. Control ARP = 12 repeats
4. Control ARP = 13 repeats
5. Control ARP = 14 repeats
6. Control ARP = 15 repeats
7. Control ARP = 16 repeats
8. Ladder 100bp (NEB)

Table 1:

Results of *T. pallidum* genotyping in syphilitic lesions, Lima, Peru. (N=26)

Dark-field microscopy	PCR Tp47 screening	Genotyping n/N (%)
1/14 (7.1)	8/12 (46.2)	14d, 4/8 (50.0)
		15d, 2/8 (25.0)
		16d, 1/8 (12.5)
		0d, 1/8 (12.5)

RESULTS

Among 401 participants, 26 presented with primary syphilitic lesions at baseline or follow-up with RPR (TPPA confirmed) titers ranging from 1:2 - 1:64. Of those 26 total lesions, 1 (7%) of 14 tested was dark-field positive. TP DNA screening using TP47 PCR yielded 12 (44.4%) positives. Among eight typable, four were subtypes 14d (33.3%), two 15d (16.7%), one 16d (8.3%) and one 0d (16.7%) where 0 = non-typable arp

DISCUSSION

This is one of the first reports describing the molecular genetics of circulating *T. pallidum* strains in Lima, Peru. Subtypes 14d and 15d were the most prevalent strains in the obtained lesions. Distribution of *T. pallidum* strains was similar to previous reports by Dai et al in China and Marra et al in USA^{4,5}. Markers of macrolide-resistance were not found in the analyzed strains as has been documented previously in several cities around the world^{6-9,10,11}. The small number of samples with recovered DNA makes it difficult to generalize our results to the larger population of syphilis cases in Lima; however, our study was the first step in the implementation of using molecular typing for syphilis surveillance.

Next Steps:

- Complement our results with the UW's method for typing using Tp0548 gene.
- Analyze a larger number of samples of lesions.
- Perform molecular resistance testing using 23S gene of all TP47 PCR positives obtained.

CONCLUSION:

T. pallidum subtypes 14d and 15d were the most prevalent strains in lesions obtained from MSM/TW who had chancre-like lesions in Lima, Peru.

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