

## SEXUAL MEDICINE HISTORY

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### Which Theory for the Origin of Syphilis Is True?

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DOI: 10.1111/jsm.12674

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#### ABSTRACT

**Introduction.** There are four theories about the origin of syphilis, of which the mostly represented one is the Columbian theory. This theory suggests that syphilis was brought into Europe in 1493 AD by the ship from Caribbean islands.

**Aim.** The aim of this study is to test all theories on a sample of 403 skeletons: 135 from prehistory, 134 from antique, and 134 from medieval period and new age from the Dalmatia (Croatia).

**Methods.** All skeletons were examined using standard anthropological methods. Paleopathological analysis was performed on each skeleton as well as additional radiographic method on one isolated skeleton.

**Main Outcome Measures.** Paleopathological changes on skeletal remains connected with treponematosi.

**Results.** Paleopathological analysis revealed one skeleton from the antique period (second to 6th century AD) that exhibited skeletal markers similar to those described in one clinical case in which congenital syphilis was confirmed by a Wasserman reaction. Skeletal remains of this person were examined macroscopically and radiographically, and the differential diagnostics eliminated other considered pathologies as well as trauma.

**Conclusions.** The finding of skeletal markers of syphilis on a skeleton from the antique supports the theory of pre-Columbian syphilis origin. **Anteric I, Basic Z, Vilovic K, Kolic K, and Andjelinovic S. Which theory for the origin of syphilis is true? J Sex Med 2014;11:3112–3118.**

**Key Words.** Dalmatia (Croatia); Treponematosi; Syphilis; Pre-Columbian Theory; Paleopathology

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#### Introduction

Syphilis is a systematic disease with various clinical manifestations caused by bacteria *Spirochaete Treponema Pallidum*. It is most often transmitted sexually and congenitally, but in some world parts, it is an endemic nonvenereal disease. One of the most controversial issues considering syphilis is the origin of syphilis. There are three major theories that try to explain its origin and rapid expansion through Europe at the end of the 15th century. The first theory assumes that syphilis was brought into Europe in 1493 AD by the ship from Caribbean islands—this theory is called the Columbian theory. The second theory assumes

that syphilis was first present in Africa and was brought by slaves to Spain and Portugal. The third theory assumes that syphilis was present for a long time in the old and new worlds and that, depending on the geographical area, four different syndromes developed [1]. There are four different types of treponematosi (bacterial infection caused by bacterial species *Treponema*): venereal syphilis (gained or congenital), frambesia, pinta, and endemic syphilis (bejel). All but pinta can leave marks on bones [2]. Despite all the theories, the origin of the disease is still an enigma [3].

The aim of this research is to test these three theories by examination of the syphilis marks on osteological material from the Dalmatian area

(Croatia) from different historical periods. By examination of the “Andelinović” osteological collection with around 3,000 skeletons dated from prehistory to new age, we will try to find an answer about the origin and expansion of syphilis. For purposes of this study, a random sample of 403 skeletons was examined: 135 from prehistory, 134 from antique, and 134 from medieval period and new age. Prehistory and antique sample are chosen as a control group given that the most accepted theory (Columbian) about the origin of syphilis supports the fact that syphilitic changes will be found on skeletons dated after the 15th century.

All skeletal remains included in this study are found in present-day Dalmatian territory, which was inherited in the past due to its favorable geographic location and mild climate. Because of turbulent history caused by numerous migrations, historical turmoil, merchandise, and idea exchange, it can be expected that various diseases that affected Europe and the world will also be seen on skeletal remains from this area. Until now in the area of present-day Croatia, anthropological research of archeological populations produced only one case of syphilis—venereal syphilis was found on a female skeleton from 15th to 17th century AD [2].

## Materials and Methods

### Archeological Context

Osteological material analyzed in this study was recovered from prehistoric, antique, medieval, and new age excavation sites.

The prehistory sample is composed of skeletal remains from five excavation sites archeologically dated to the Iron Age. A total of 52 graves were anthropologically analyzed (18 from Nadin flat necropolis, 28 from necropolis Ljubač-venac, four from Jokina glavica, one from Duševića glavica, and one from Ljubač-barrow 4), and a total of 135 skeletons were examined [4]. This area was populated by the Liburns, one of the Illyrian tribes. They inherited the area of northern Dalmatia from 12/11 century BC until the Roman arrival in this area. During that time, they lived in clans. In 9th century BC, they isolated as a separate community which differed from the rest of the Illyrian tribes by social and cultural practices. It is believed that this was a reflection of strong pre-Indo European influences. The community was also specific by the female importance in the society that was unusual for that time period. Maternal kinship was very important, and the community had a female-

maintained ancestor cult. They used a special technique for wooden boat production—wood was not attached with pins but was sawed by ropes using a special technique. Their big war ships (Liburns) were used by Romans as part of their war fleet.

The antique sample is composed of a sample from the excavation site Solin-Smiljanovac. More than 1,000 graves were excavated at this site, and by random computer sampling, 134 individuals were chosen for analysis. Solin-Smiljanovac was a great necropolis of antique Salona, the metropolis of the Roman province of Dalmatia. Salona was a coastal stronghold and port of Illyrian Delmatae. In that time in Salona, besides the Illyrians and inhabitants from Greece, a large number of Italic also lived there. After the civil war between Caesar and Pompei in 48 BC, Salona, who sided with Caesar, became a Roman colony with full name Colonia Martia Iulia Salona and became the centre of the Roman province of Illyricum, later a province of Dalmatia. After the Illyrian rebellion was suppressed (Baton rebellion that lasted from 6th to 9th year AD), a period of peace and prosperity occurred, mostly seen through its urban development and strong building activity. According to the Roman custom, outside the city walls, alongside the roads leading from the city, four necropolises were built: western, eastern, northern, and southeastern.

The medieval and new age samples consist of skeletons from two excavation sites. From the late medieval excavation site Kamen Most Kaldurma (dated in 14th–15th century AD), 31 skeletons were analyzed [5], and from late medieval/new age excavation site Saint Catherine (dated in 16th–19th century), 103 skeletons were analyzed [6]. Kamen Most Kaldurma is a medieval cemetery situated in a location of present-day Kamen, most of which was inherited during the antique period. Graves were oriented in an east–west direction and were regularly situated, which indicates that other tombstones besides the one found at the site were present at the time. Most of the diseased were put in a barrow without architecture, and eight graves were covered by stone sheets. Although there were no burial findings, the burial image and tombstone revelation dates this excavation site to the late medieval period, to the 14th–15th century AD.

The cemetery in the Dominican monastery of Saint Catherine (town Split) is dated by archeological findings (ceramics, crown pearls from bone, glass, etc) in the second half and the end of 16th century AD. The last time period in which inhumation was allowed in the town environment was

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