

## CASE STUDY No. 4: The Nasca Boy

In this activity, you will work through a case study of a single individual who exhibits indicators in their remains suggesting experience of disease or injury during life.

You will consider the features of the individual (age, sex, and pathology). Taking into account their mortuary and lifeways contexts, you will then assess whether they likely required, and received, health-related care at some stage. Remember that ‘health-related care’ is defined along a continuum spanning ‘hands-on, intensive care’ at one end, and ‘accommodation of difference’ (i.e. adapting environment and expectations to allow participation) at the other.

Note: As in most bioarchaeological research, you may not have all the data you would like in order to be completely confident in your conclusions. Hint: focus on the likely impacts of the pathology (described below) on ability to function independently, and to fully participate, in the specific community setting at that particular time in history.

Read the case study and complete the *Short-Form Index of Care* to the best of your ability. Refer to the Glossary on the final page for brief definitions of unfamiliar terms.

### MORTUARY CONTEXT:

- Mummified remains of a child – ‘the Nasca Boy’ - were found in a burial pit in Agua Salada, Nasca Province, Peru ([Fig. 1](#)).
- Remains date to 700AD, and belong to the Late Nasca culture (Early Middle Horizon)

### THE INDIVIDUAL:

- The Nasca Boy was male; ~8 years at death; with good soft tissue and skeletal preservation; stature ~1.07m.
- Cause of death: tuberculosis (TB), a bacterial disease caused by infection with *Mycobacterium tuberculosis*.
- The remains are posed on a cushioned adobe ‘stool’, knees bent and forelegs lying tightly alongside upper leg bones (a position sometimes adopted by those with long-term lower body mobility loss). This mortuary presentation is unique. ([Figs. 2 and 4](#)).
- The ‘stool’ (used by the Nasca Boy during life) is also a unique burial inclusion.
- The remains (including the stool) were wrapped in textiles to form a single ‘mummy bundle’, placed in the burial pit and surrounded by grave goods ([Fig. 3](#)).

### LIFEWAYS CONTEXT:

- Community: small, close-knit hamlet (likely extended family-based), located on a riverbank ‘oasis’ surrounded by desert, around ~40km from sea ([Fig. 1](#)).
- Economy: agricultural (crops, livestock), part of a well-established trading network.
- Environment, Health and Society: Extended drought at this time linked to growing competition for arable land; increased child mortality and general health stress; reduced life expectancy; political instability.

**PATHOLOGY:**

Presence, spread and impact of TB were established in an autopsy involving macroscopic, radiographic, and histological analyses. The autopsy found:

- TB of the spine - ‘Pott’s disease’ - in lumbar vertebrae 1-3 (Fig 4.), leading to destruction of (parts of) the spinal canal and a compromised spinal cord (see also ‘psoas abscess’). Damage to the spinal cord would have impacted organ function and lower body mobility (extent of neurological impact unknowable).
- Psoas abscess (infection in the psoas muscle caused by lumbar TB) eroded adjoining vertebral bone and soft tissue.
- Kyphosis (Fig.4) and scoliosis.
- TB in the right lung, liver, right kidney, heart and pericardium.
- Multiple skeletal indicators of disrupted growth in both tibiae (Harris lines - Fig 4), reflecting periods of health stress between 18 months – 7yrs.

TB is a chronic disease. Years may pass between initial infection, onset of symptoms, and eventual death. Symptom severity may fluctuate, with periods of remission. Table 1 outlines the hypothesized timing of disease progression for the Nasca Boy.

**YOUR TASK:**

On the basis of the information above, fill out the *Short-Form Index of Care*. Keep in mind that more than one condition might be operating to affect the Nasca Boy’s experience, and that individual health conditions may interact to affect overall experience. In summary, here are the questions you will be addressing:

- Based on the skeletal evidence for pathology presented above, what kind of clinical and functional impacts do you think the Nasca Boy likely experienced?
- Given the lifeways context, could the Nasca Boy have looked after himself, or was care from others in his community likely needed to help him to manage these impacts?
- If the Nasca Boy needed care from others, what kind(s) of care do you think might have been required, and who might have provided this care? (Note: people can receive different types of care either at the *same* time (to address different impacts) or at *different* times (as their condition improves or worsens).



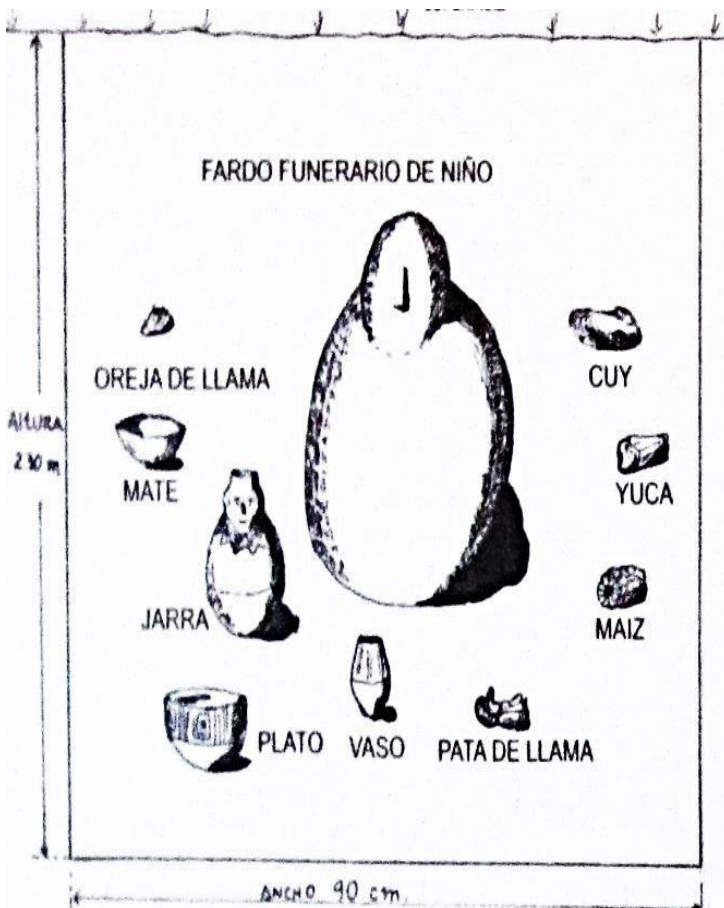
**FIGURE 1:** Location and physical environment of Agua Salada, Nasca Province, Peru.

Google Maps



**FIGURE 2:** Two views of the Nasca Boy on display in the Regional Museum of Ica. Note: spinal kyphosis (see glossary); position (lower legs bent back tightly beside upper legs); and grave goods (above - panpipes top left).

Photographs taken with kind permission of the Ica Museum Director

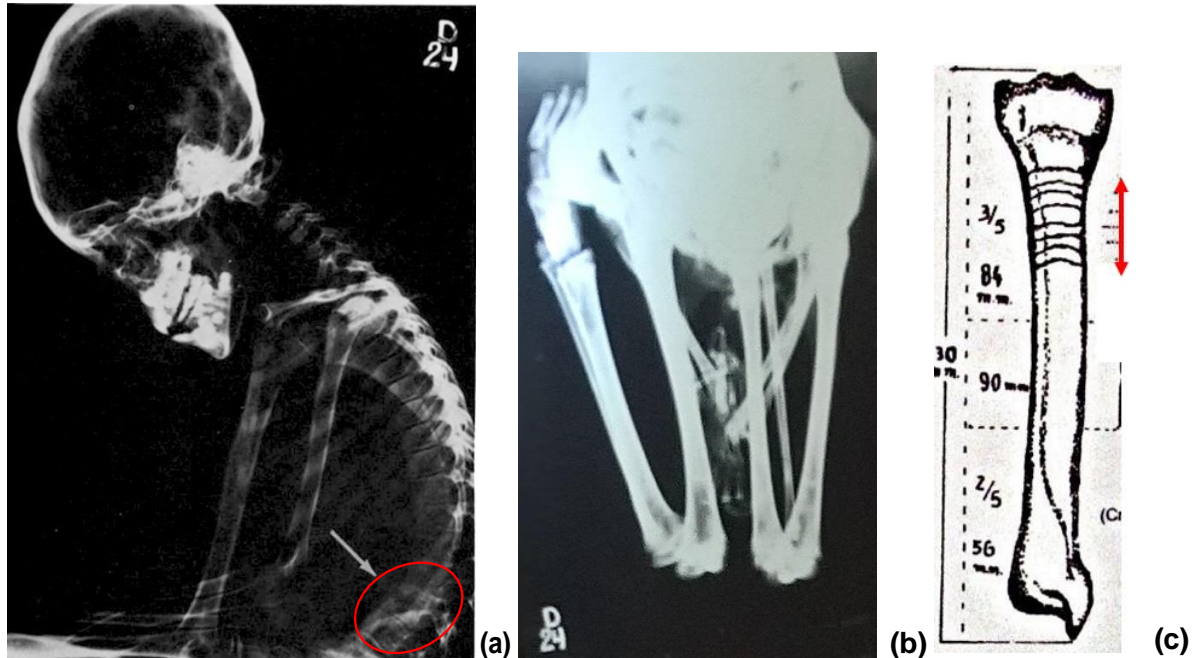


**FIGURE 3:** Sketch of the mortuary context, with a selection of grave goods.

Clockwise: guinea pig; yuca; maize; llama foot; vessel (pottery); bowl (pottery); effigy jar (pottery); gourd; llama ear.

The burial pit is noted as 230 cms deep and 90 cms wide.

Photographs taken with kind permission of the Ica Museum Director



**FIGURE 4:** (a) Left lateral X-ray of head and upper body; evidence of TB (Pott's disease) manifests in changed lumbar spine bone density (arrow). (b) X-ray of lower limbs. Both tibiae exhibit Harris lines (although these are hard to distinguish in the photograph). (c) Sketch of right tibia, Harris lines (indicated) suggesting 7 or 8 instances of growth disruption between ages of 1.5 and 7 years.

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**Table 1: Likely timing and nature of TB disease progression.**

Age	Event
~1.5 – 2 years	<p>Primary TB infection, likely mild symptoms which quickly resolve. Infection becomes dormant.</p> <p>First Harris line appears ~18 months.</p>
~3 - 5 years	<p>Reactivation of dormant TB - onset of Pott's disease (TB of the spine).</p> <p>Symptoms initially non-specific and mild, but gradually increasing in intensity – they include e.g. pain, fever, night sweats, weight loss, fatigue, respiratory problems, weakened immune system.</p> <p>Likely periods of intermittent improvement in symptoms, followed by return of symptoms.</p> <p>Four Harris lines correspond to this period.</p>
5 – 7+ years	<p>Psoas abscess initiates (between 5-6 years), infecting adjoining lumbar vertebral bone and intervertebral discs, and further undermining spinal integrity.</p> <p>Increasingly destructive impacts of Pott's disease. Incremental damage to lumbar spine results in spinal deformity and neurological dysfunction. All symptoms (see above) increase in severity.</p> <p>The two last Harris lines correspond to this period.</p>
7+ - 8 years	<p>TB crosses into the blood stream and is widely disseminated throughout the body - bacteria infect lung, liver, kidney and heart.</p> <p>This rapidly leads to multiple organ failure, with death likely occurring within days.</p>

**GLOSSARY: Case Study No. 4 – The Nasca Boy\***

\* For more detailed definitions refer to your text books or a dictionary.

**Methods of analysis:**

- **Histological analysis:** the study of the structure ('microanatomy') of cells, tissues and organs using a microscope.
- **Macroscopic analysis:** study of material with the naked eye – assessing evidence without the aid of any magnifying optical instruments.
- **Radiographic analysis:** use of radiation to view the internal parts of the body. In this study, X-rays were used.

**Pathology**

- **Harris lines:** dense, transverse lines seen in X-rays of long bones. Formed during the period of skeletal development, each line indicates a temporary interruption to growth – usually in response to physiological stress (pathology, nutritional deficiency).
- **Kyphosis:** an abnormal outward curve of the spine which causes the upper back to 'hunch forward'. It is often found in association with vertebral damage of spinal TB. It may cause stiffness, discomfort and/or pain, but it may also be asymptomatic (see 'scoliosis').
- **Pott's disease:** TB infection of the spine, most commonly affecting the lower thoracic and upper lumbar vertebrae, and usually resulting from hematogenous (blood-borne) TB infection from another site - often the lungs.
- **Psoas abscess:** a pocket of pus in the psoas muscle resulting from bacterial infection (the psoas muscles are long, ribbon-shaped muscles running either side of the lower back; infection is usually on one side only). In this case, TB bacteria have most likely spread to the psoas muscle from the TB-infected lumbar vertebrae. Symptoms will mirror many of those associated with TB (see [Table 1](#)), but are also likely to include back pain and pain radiating down the lower body.
- **Scoliosis:** a sideways curvature of the spine, quite commonly found in association with the vertebral damage of spinal TB. As with kyphosis (see above), it may cause stiffness, discomfort and/or pain, but mild scoliosis may be asymptomatic.

**Anatomy:**

- **Pericardium:** a protective, fibrous, fluid-filled sac which surrounds the heart, separates it from other structures, and supports cardiac function.