Assessing pubertal age through testicular and epididymal histology in Bísaro pig

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Introduction

Bísaro pig (BP) have grown in numbers in the last decade, representing one of the **most important Portuguese livestock breed** [1].

Comprising a large number of smallholders and free-range farms [2], Bísaro producers face many constraints to comply with the 2008 EU welfare regulation, **particularly in relation to surgical castrations**.

While **immunocastration is suggested as valid alternative to surgical castration** [3], effectiveness of this method is yet to prove in these alternative systems. These difficulties are being pointed as one of the most important explanation to the decline of high-end Bísaro certified cured products.

This study aims to **estimate the age of puberty** in male BP through testicular and epididymal morphometry **to adjust an immunocastration protocol**.

Material & Methods

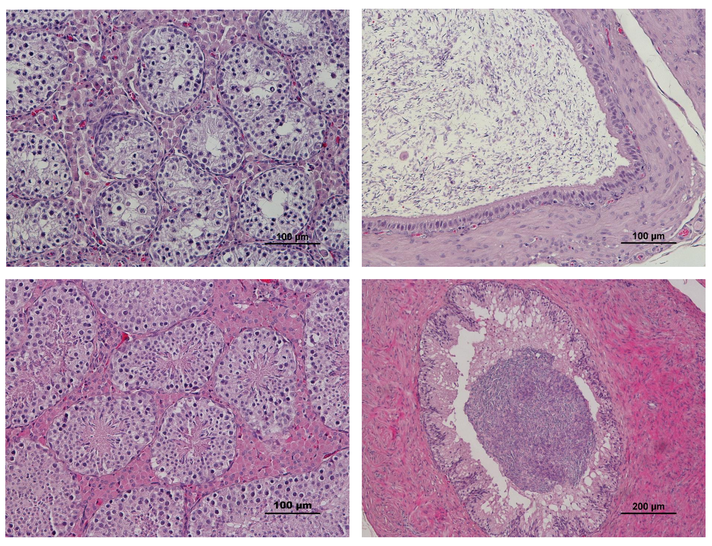


FIG 1 | Various histological images of seminiferous tubules and epididymis used to evaluate microscopic parameters (100-200x magnification)

Testis

Epididymis

Macroscopic parameters
Dimensions (length, width, depth)
Weight

Microscopic parameters
Spermatogenesis scoring
Diameter of seminiferous tubules
Diameter of Leydig cells
Diameter of Leydig nucleus
Leydig and Sertoli cells density
Ratio tubules/interstitial area
Presence of spermatozoa in the epididymis and vas deferens

Callipers
Electronic scale

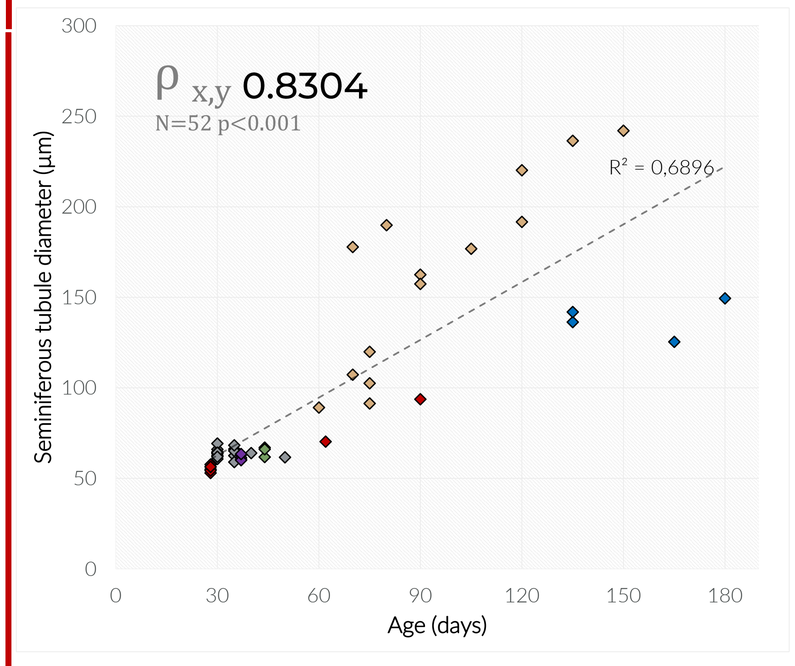
87 animals
1-8 month-old
6 farms

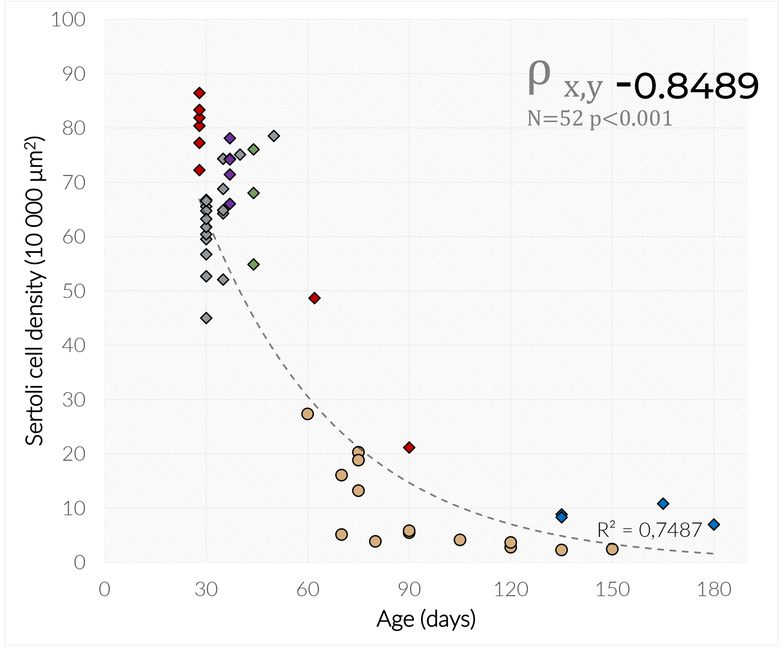
Nikon DS
Image J
FIJI
100-400x

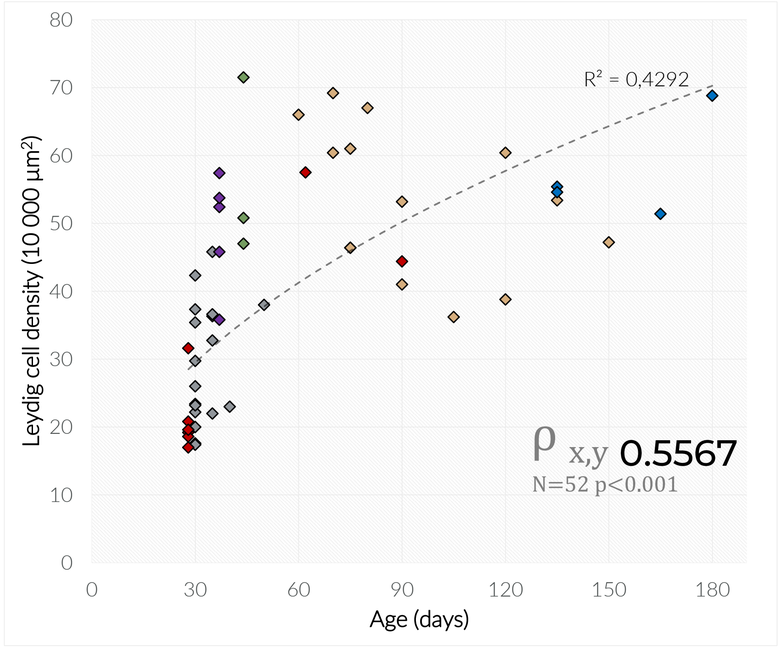
Processed through
Fixation in 10% buffered formalin
Paraffin embedding
Routine haematoxylin–eosin stain

Results

MICROSCOPIC AGE CORRELATIONS







GLM MODEL PREDICTOR

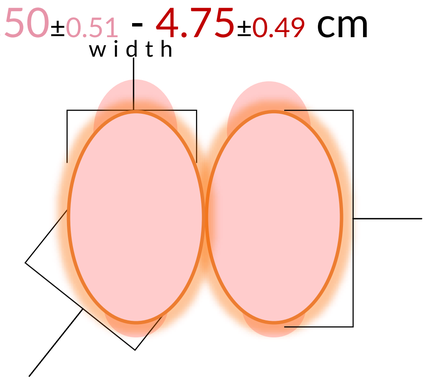
A generalized linear model was used to predict testis dimensions and the age of the animal

WHEN SPERMATOZOA WAS FOUND IN THE EPIDIDYMIS

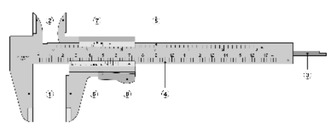
WHEN SPERMATOZOA WAS FOUND IN THE VAS DEFERENS

TESTIS DIMENSIONS

4.50±0.51 - 4.75±0.49 cm
width



6.98±087 - 7.34±0.79 cm
length



3.77±0.13 - 3.98±0.47 cm
depth

AGE

117.50±6.36 - 145.71±3.79 days

SPERMATOGENESIS SCORING

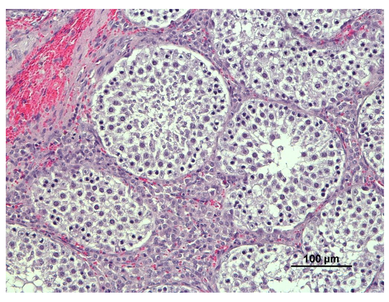
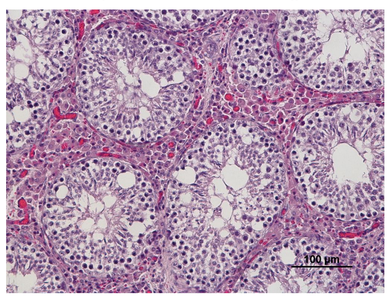
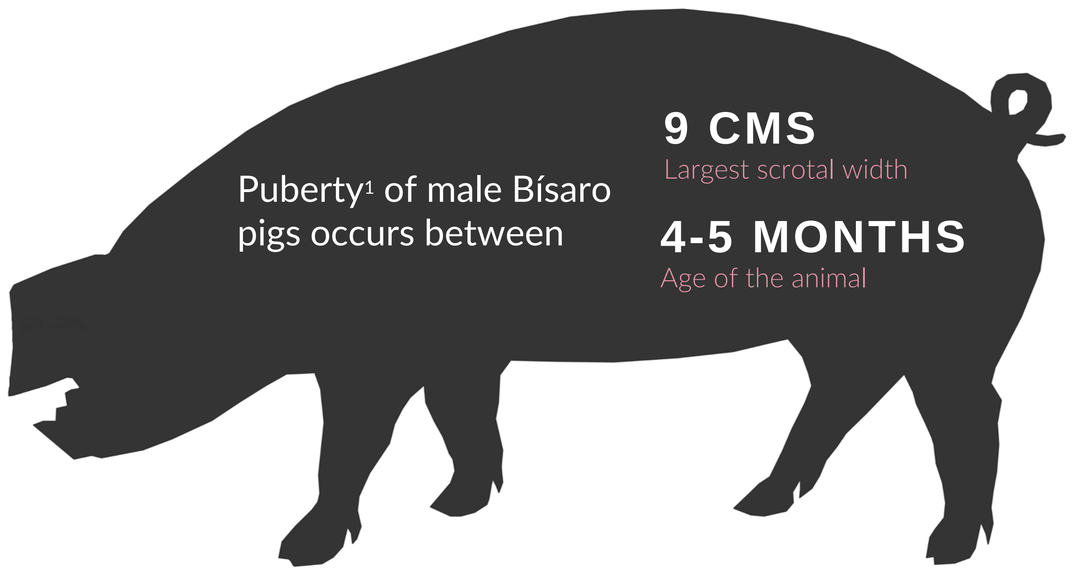


FIG 2 | Round spermatids (score 4) are firstly seen in 70 days old animals (200x magnification)

FIG 3 | Complete spermatogenesis (score 7) is firstly identified in 90 days old animals (200x magnification)



Conclusion



[1] defined as the age when functional sperm is present in boars

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About the author

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