

# **Rare Patterns of Finger and Palm Prints in Anorexia Nervosa**

## **An Exploratory Dermatoglyphic Study**

---

**Israel Oron (Ostre), Ph.D.  
Consulting Psychologist**

**Rachel Bachner-Melman, Ph.D.  
Eating Disorders Unit, Adult Psychiatric Ward,  
Hadassah University Medical Center  
Israel**

# **Dermatoglyphics = Skin Carving**

**The scientific study of the ridges and creases on fingers and palms, and a branch of physical anthropology, of medicine and of genetics.**

**Finger and palm prints are comprised of a large number of dermatoglyphic configurations. Anthropological studies indicate that the vast majority of all human beings are characterized by the same frequent mode of configurations. However, a few people have other kinds of configurations that are infrequent, and at times rare. These rare configurations are associated with specific medical disorders such as diabetes and cancer and with psychological problems including psychosis and hypertension.**

# The Research

The purpose of the study (conducted in 2010) was to lay the groundwork for a dermatoglyphic tool that screens populations at risk for anorexia nervosa (AN); specifically we enquired whether the dermatoglyphics of women with AN differ from those in healthy groups.

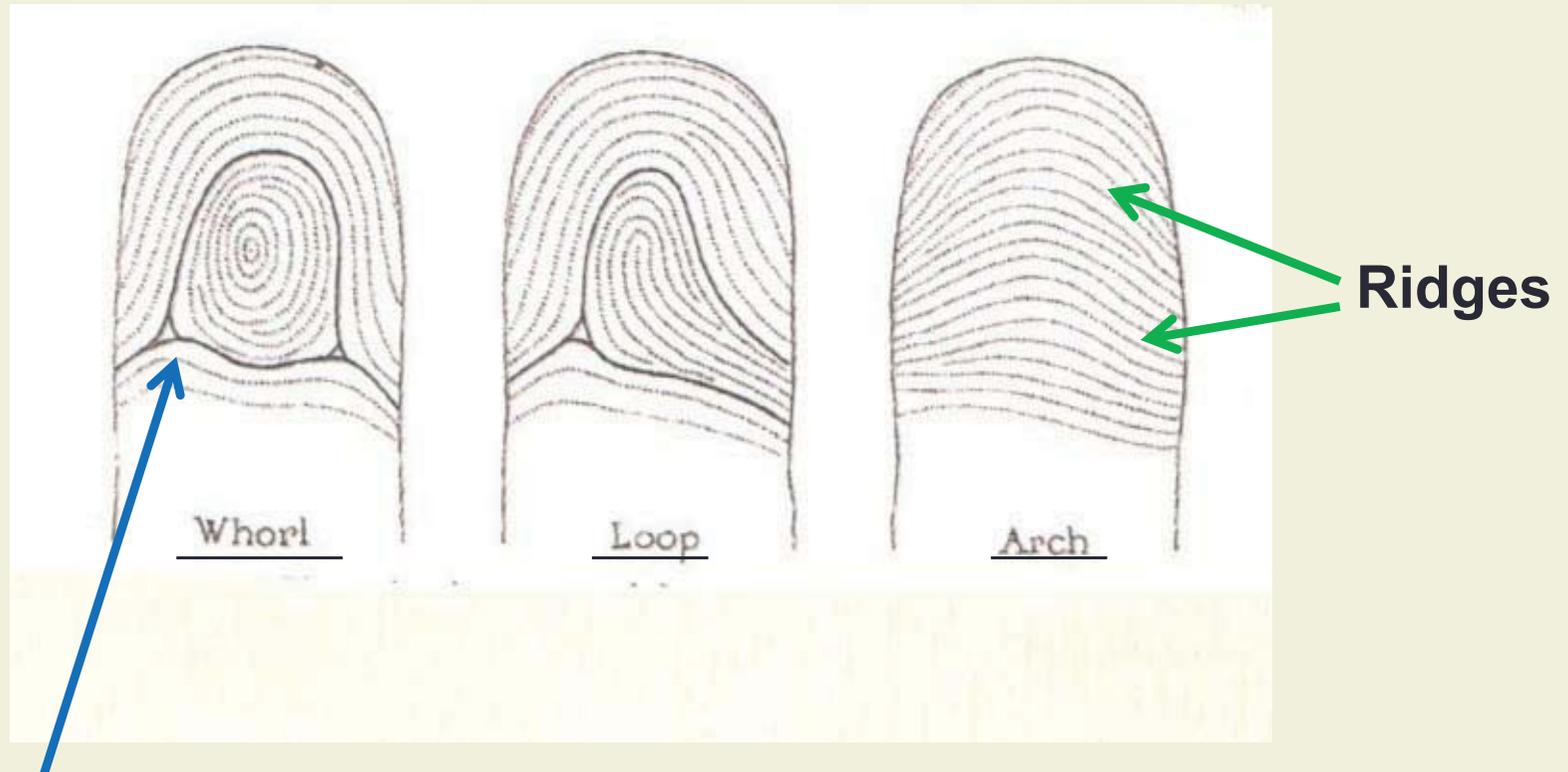
Sample: Twelve Israeli women aged 22-31 with a current or past DSM-IV diagnosis of AN in various stages of illness or recovery. AN diagnosis was determined by the second author. Participants provided 120 fingerprints and 24 palmprints in total that were obtained and analyzed by the first author.

## ***Results***

**We observed three unusual fingerprint patterns and five uncommon palmprint features in the research group, compared with two healthy controls.**

**Fingers: Next slide (5) shows the three common (or frequent) patterns located on the tips of the fingers. The green arrows (on the right) mark the ridges on the skin. Ridges form patterns. The pattern of the whorl, for example, is made up of circular ridges. The blue arrow (on the left) points to a tri-radius.**

# Common Patterns on Fingers

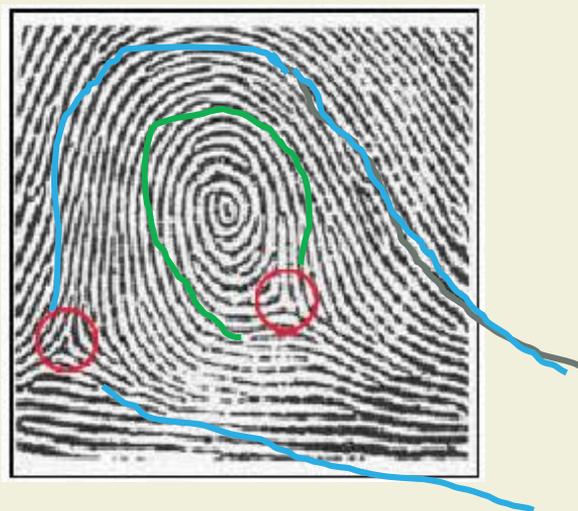
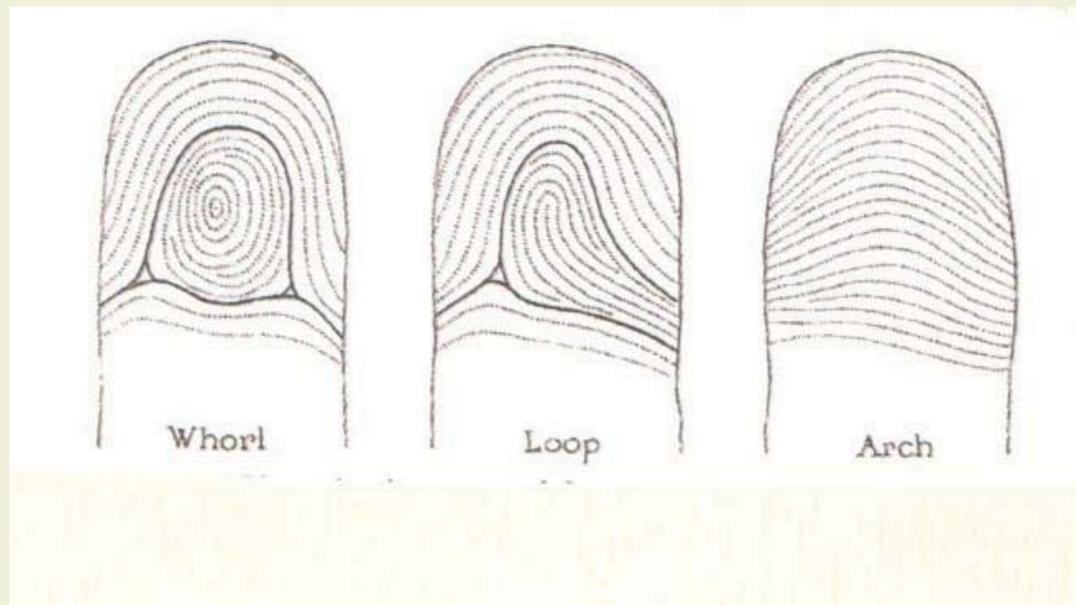


**Triradius: A meeting point of three opposing ridge systems, thus forming a Y shape.**

**The rare patterns found in the research group are shown in slide 7. There are deviations from each of the common patterns. On the left side there is a small whorl (in green) located within a loop (marked in blue), next is a pattern of two loops, and finally an arch that resembles a tent. (The red arrow points to the "pole" of the tent).**

**Slide 8: Generally, the three deviations were more frequent in the research group than in the two control groups. The histogram represents the frequency of the rare patterns in the research group (in green) and in the control groups. The significance level is indicated above each histogram. (Frequencies of the rare patterns were compared to healthy female groups as published in the literature).**

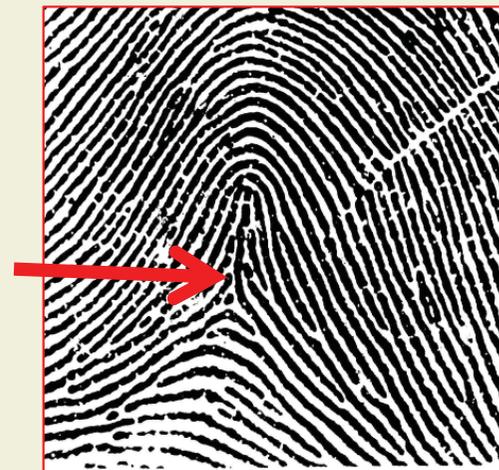
# Rare Patterns Found on AN Fingers



**central pocket**

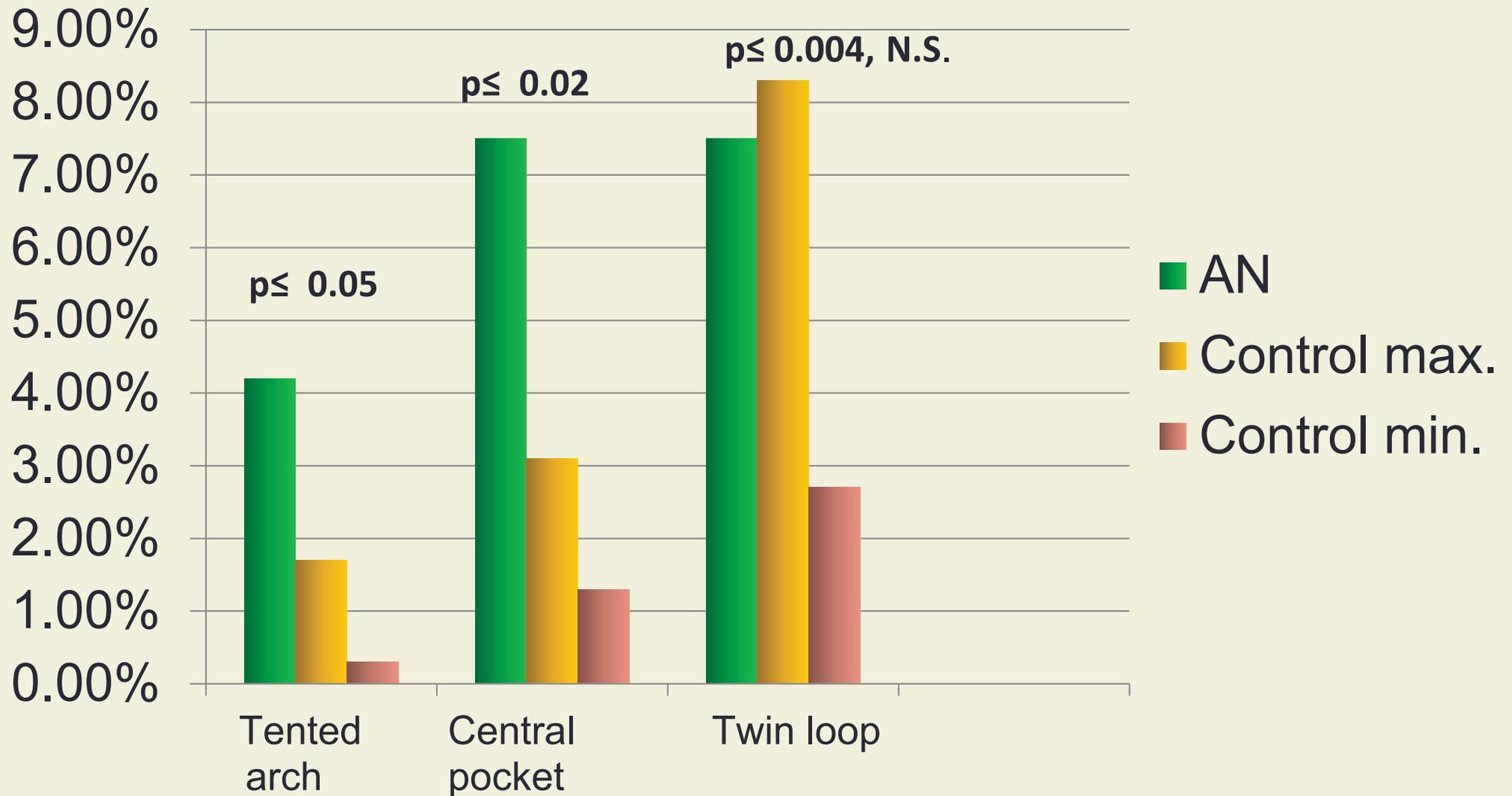


**twin loop**



**tented arch**

# Rare Patterns: AN vs. Controls



**Palms**: Usually on the palm there are five triradii (slide 10): four digital triradii (marked: a, b, c, and d) and an axial tri-radius (marked by the letter: t).

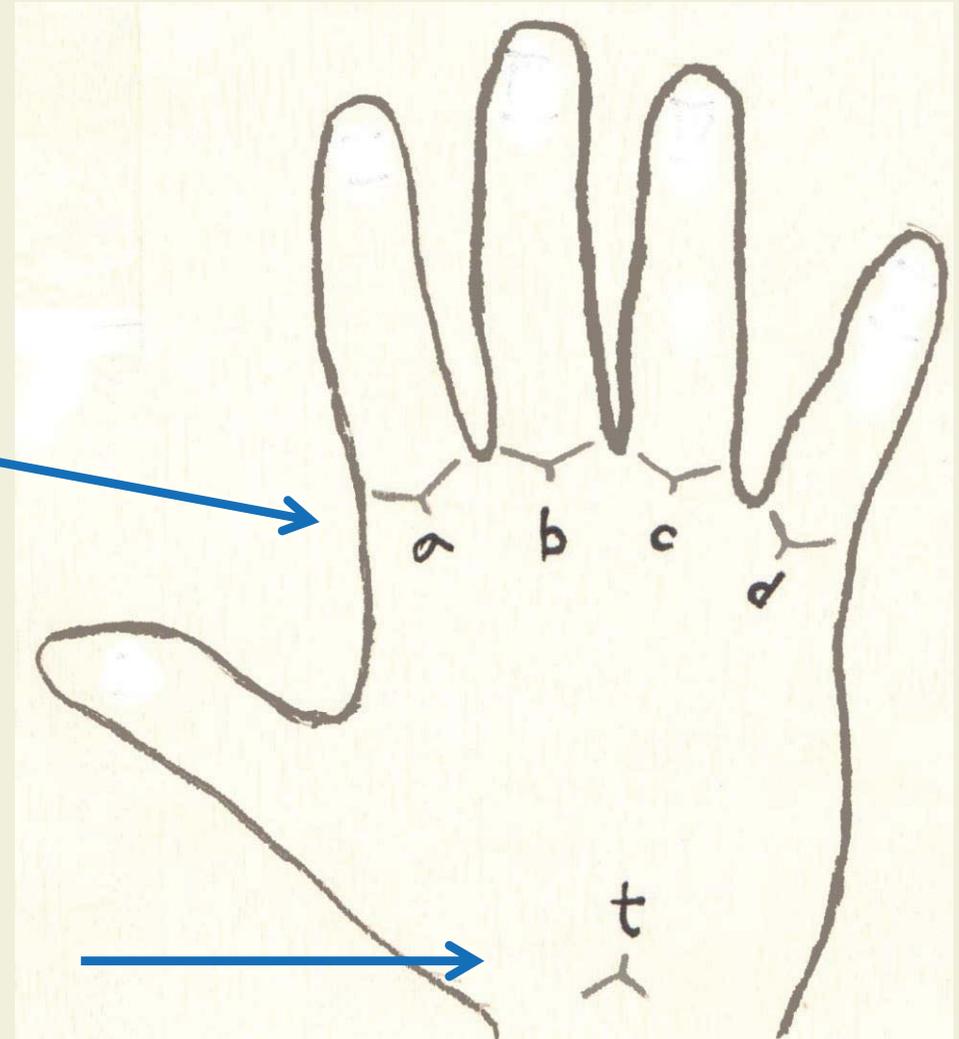
Slide 11 illustrates three deviations from the norm. On the palm on the right side the red arrow points to tri-radius C which is missing in some palms in the research group. The second deviation: the axial tri-radius "shifted", so to speak, to a distal position (marked by the green arrow). The third deviation: the axial tri-radius is missing altogether.

On the left side of the slide, two of these deviations are shown on two palms taken from the research group. In the upper example the positions of only the three remaining digital triradii a, b, and d are marked by red circles. In the lower example a red circle marks the distal position of tri-radius t.

# Common Triradii on Palms

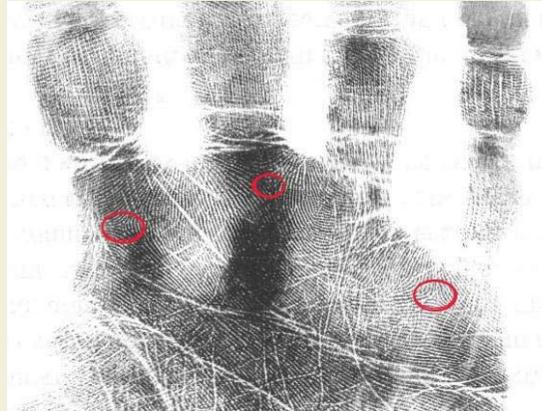
**4 Digital triradii:  
a, b, c, d**

**Axial triradius: t**

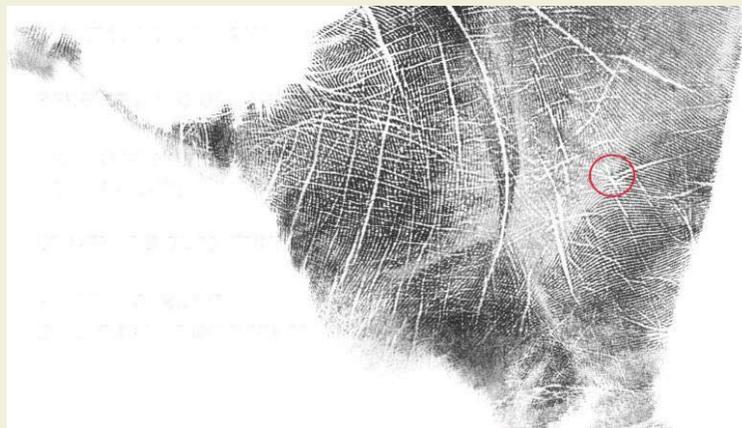


# Rare Triradii Found on AN palms

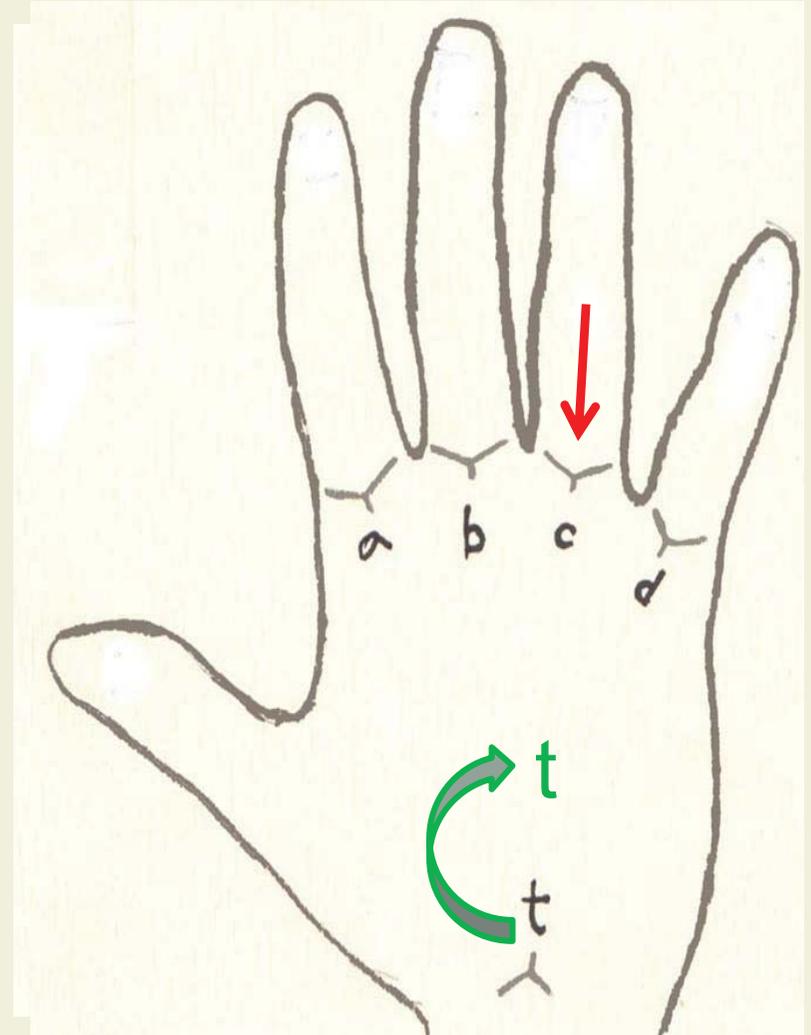
1. Missing triradius C:



2. Distal triradius t:



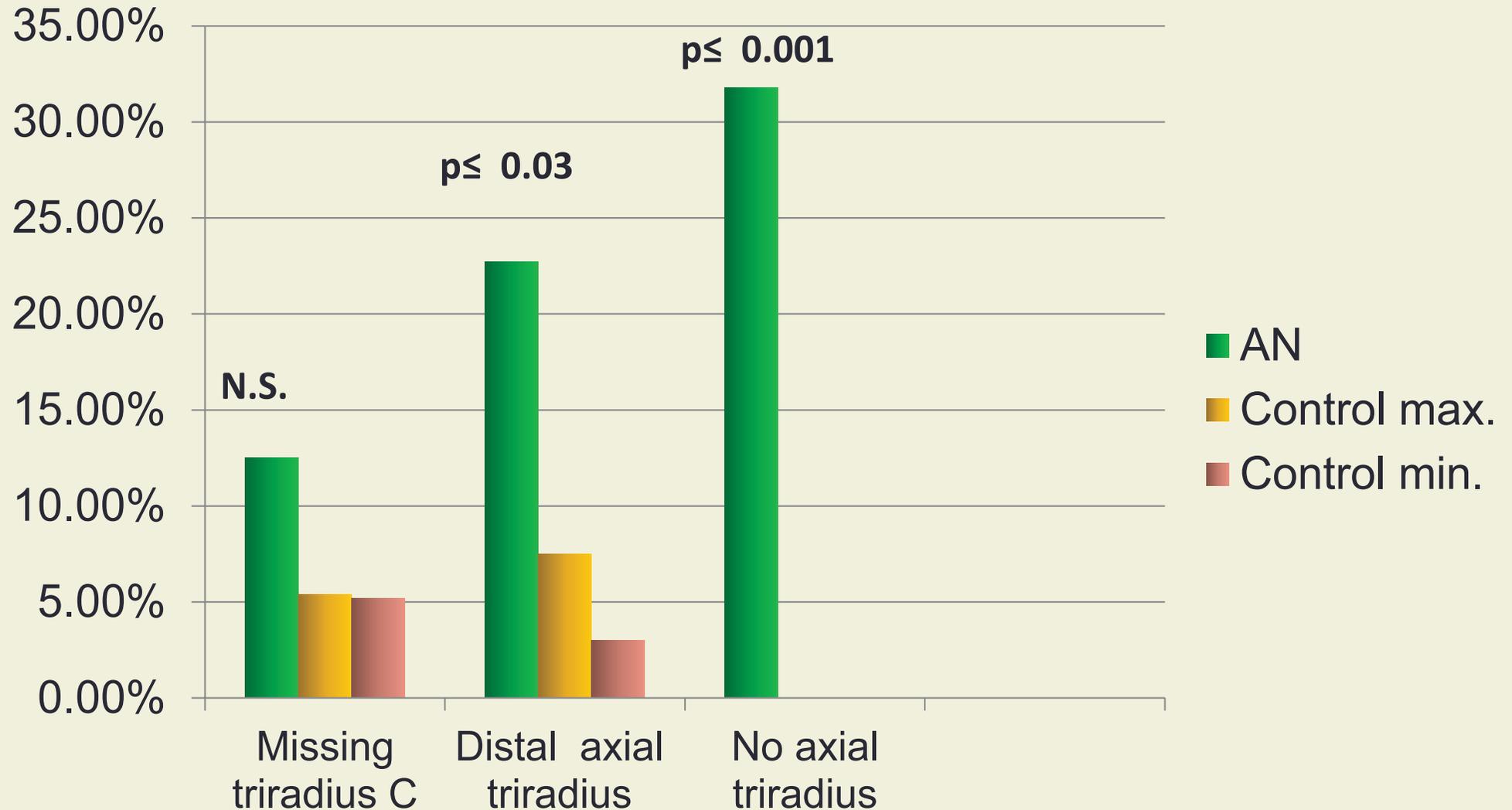
3. Missing triradius t



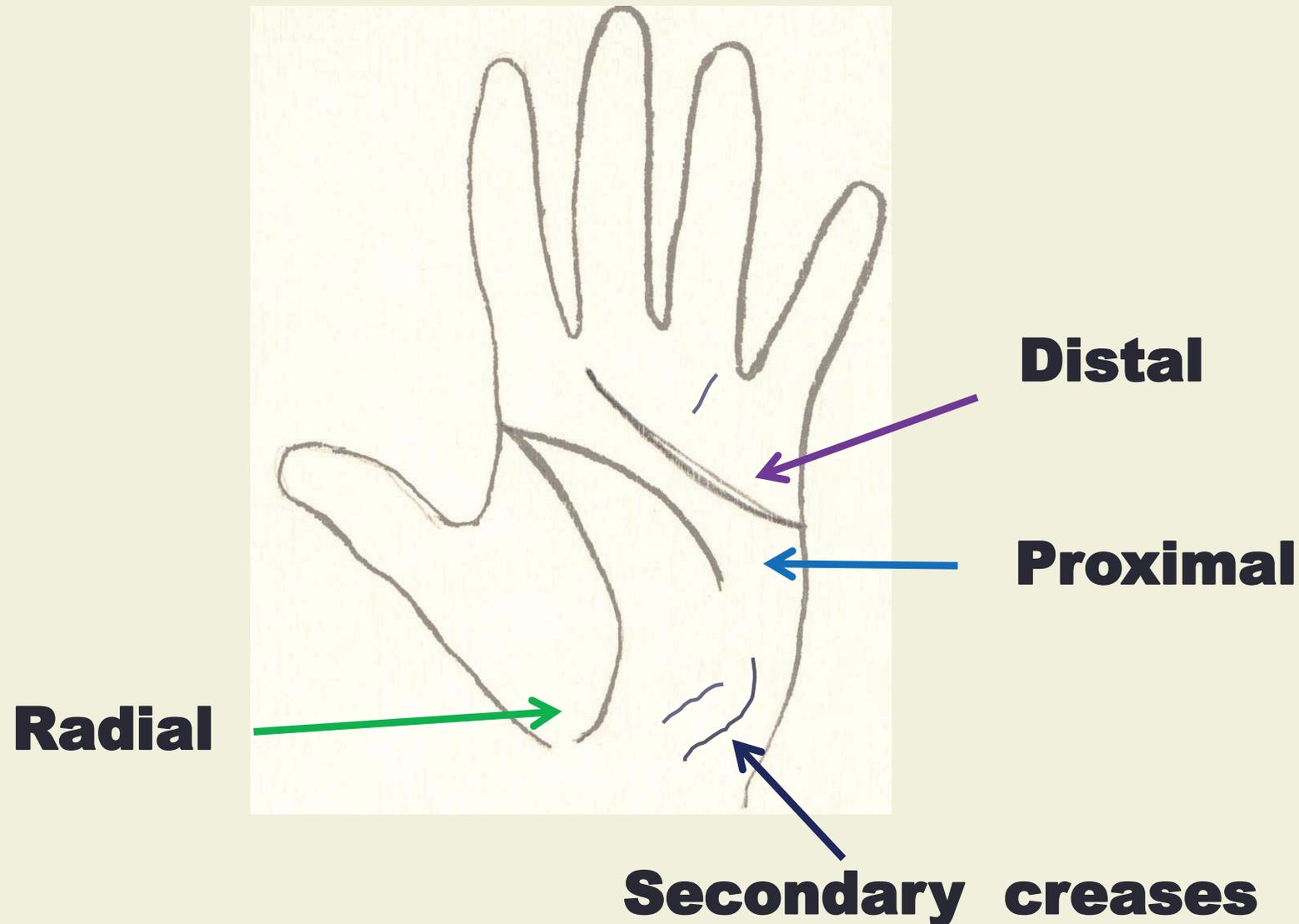
**The comparison with the controls is presented in the next slide (13). (As to the histogram of the missing axial tri-radius – none was found in the controls).**

**Slide 14: On the palm there are three primary creases. These three creases have two points of origin - an ulnar for the distal transverse crease (see the right edge of the palm), and (at the left edge) a common radial point for the proximal and the radial creases. In addition, on the palm there are secondary creases - numerous short creases, which are distributed all over the palm.**

# Rare Triradii: AN vs. Controls



# Common Creases on Palms

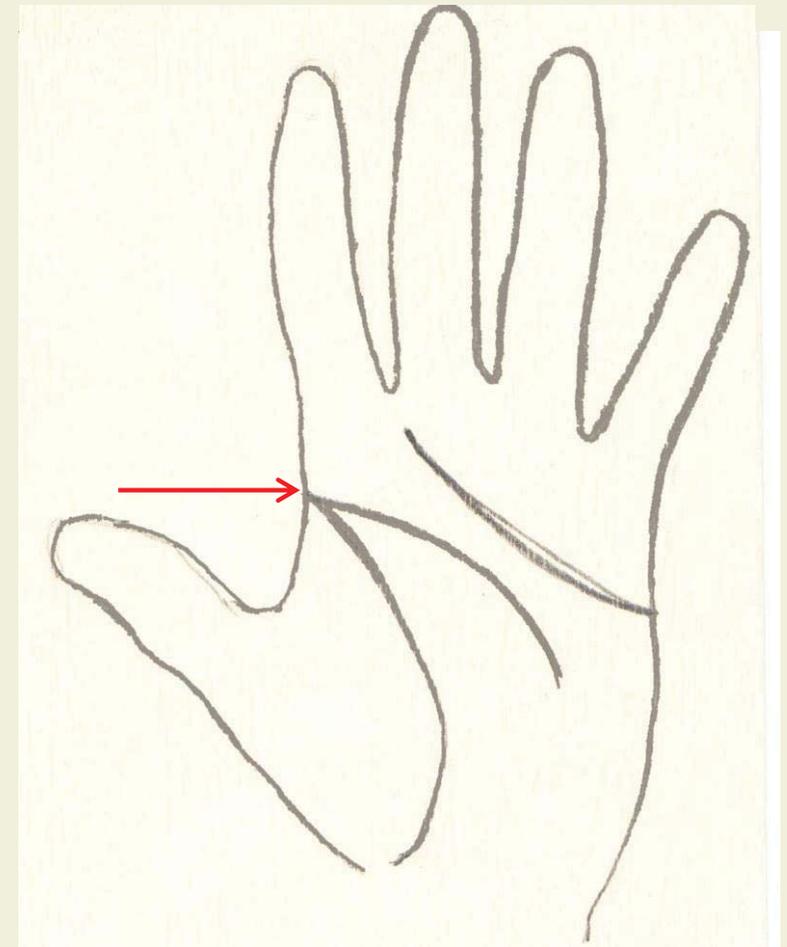
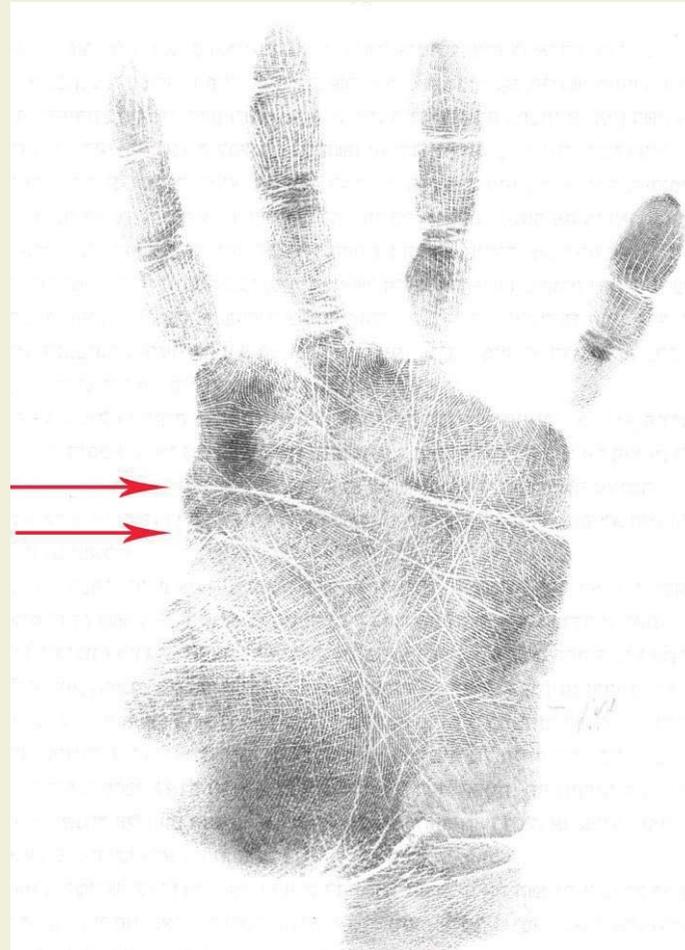


**Next slide (16) shows two crease deviations. There are separate points of origin for the proximal and the radial creases instead of one (shown in a palm from the research group, on the left side). The second deviation is made up of closely packed secondary creases which cover the palm like a curtain, obscuring any other features beneath.**

**Slide 17: In comparing the results with healthy females it was found that in one of the control groups the separate radial points of origin was not found at all, and the high density of secondary creases was missing from both of the controls.**

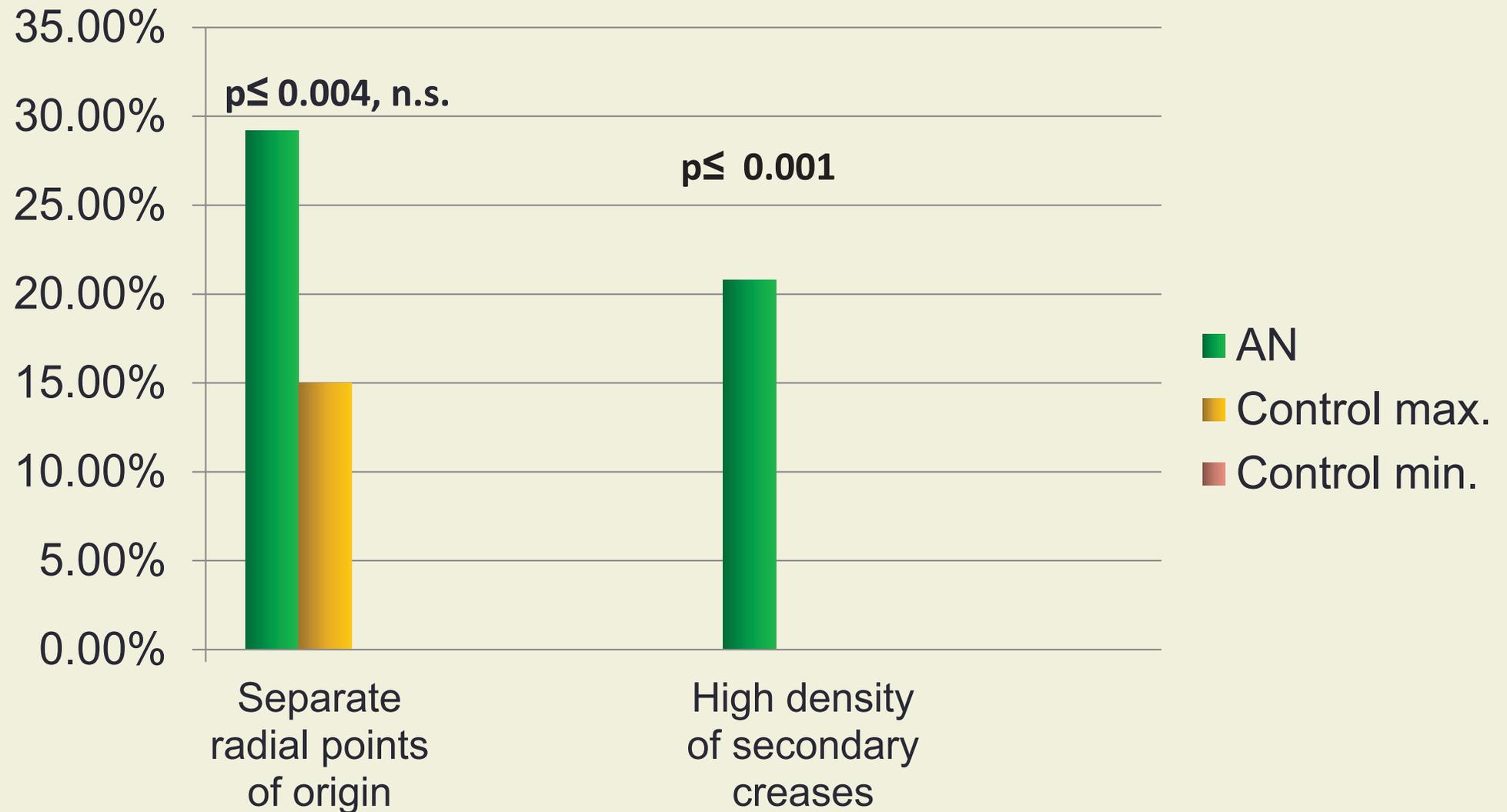
# Rare Creases Found on AN palms

1. Separate radial starting points:



2. High density of secondary creases

# Rare Creases: AN vs. Controls



# Research Summary

**The results of this exploratory study form a promising basis for future studies that will:**

- 1. Examine some more possible rare features in AN females.**
- 2. Suggest a dermatoglyphic tool, made from these features, that has a discriminatory power to identify vulnerability to AN.**

**Such a tool, when established and validated, should be used in screening populations at risk, in particular in early childhood, to monitor for early onset symptoms. If such individuals could be closely monitored and encouraged to participate in prevention programs, years or decades of suffering, and even premature death may be prevented.**

**Correspondence (first author):**

**[isr.oron@gmail.com](mailto:isr.oron@gmail.com)**

**Please mail any questions and comments**