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# TWINCORE Features of Gouty Arthritis by High Frequency Ultrasonography



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## Conclusion

Ultrasonography (U/S) is achieving progress in the early diagnosis of gout. Sonographic findings in gout can be assigned a temporal pattern, with microtophi being associated with the shortest and full tophus formation with the longest disease duration. Microtophi can be used for screening purposes, and the diagnosis can then be verified by synovial fluid analysis.

## Introduction

The use of U/S has recently increased in the evaluation of asymptomatic hyperuricemia which may go on for a considerable time before specific manifestations of gout become noticeable. Imaging showing crystal deposition and inflammatory manifestations may lead to the initiation of treatment for gout before the development of irreversible complications<sup>(1)</sup>. The double contour sign, floating microtophi and full tophi are known sonographic features of gouty arthritis. In this study we tried to identify different sonographic features of gouty arthritis and correlate them with the duration of arthritis in order to identify the sequential order of their appearance<sup>(2)</sup>.

## Methods

A descriptive cross-sectional study was carried out on 60 male and female patients aged 40 years or above with mono or oligoarthritis of the lower limb. U/S examination of 57 knees was done in both longitudinal (30 degree flexion, with quadriceps contraction) and transverse planes with anterior and posterior views. Twenty three 1<sup>st</sup> metatarsophalangeal (MTP) joint was examined in dorsal, lateral and plantar views in longitudinal and transverse planes<sup>(3-5)</sup>. The bipolar method facilitated in some cases the identification of crystal clusters. Erosions were considered to be present when visualized in both the longitudinal and transverse planes, and with definite loss of bone cortex<sup>(6)</sup>. Microtophi were considered only when they had no posterior shadow and were <1 mm in size<sup>(7)</sup>. Decreasing gain improved detection of microtophi<sup>(8)</sup>. The same U/S settings were used for all patients.

## Results

There was a positive association between older age and gouty arthritis. Males were affected more often than females and 1<sup>st</sup> MTPs more often than knees. The most common sonographic sign of gout was microtophi, especially inside Baker cysts (Fig. 1a), followed by double contour (Fig. 1b), erosions, and tophus (Fig. 1c) (also see Fig. 2). The four signs could be arranged in a descending manner according to sensitivity: 1- microtophi, 2- double contour, 3- erosions, and 4- tophus; and according to specificity: 1- tophus, 2- double contour, 3- microtophi, and 4- erosions (Fig. 3). The relation between disease duration and sonographic findings was strongest with tophus, followed by erosion, then double contour and, microtophi (Fig. 4).

## Acknowledgements

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## Sonographic images and data obtained



Figure 1a: floating microtophi Figure 1b: double contour sign Figure 1c: Tophus

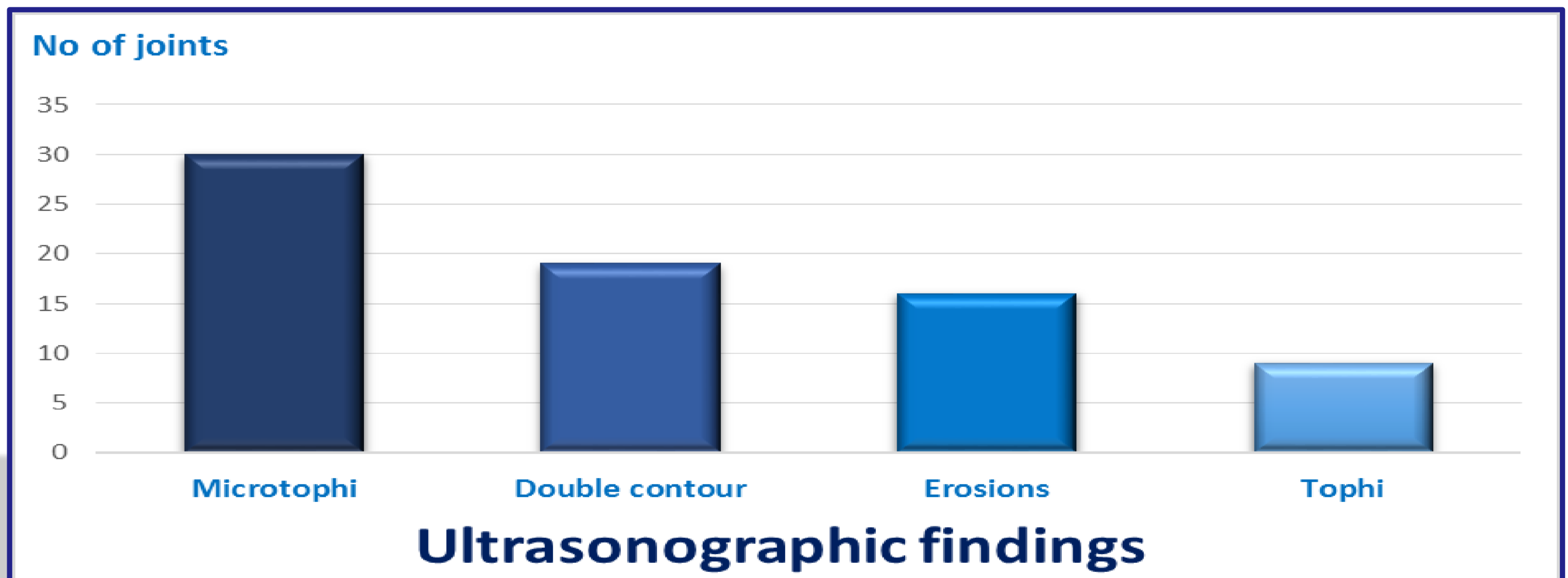


Figure 2. frequency of US findings of gouty arthritis

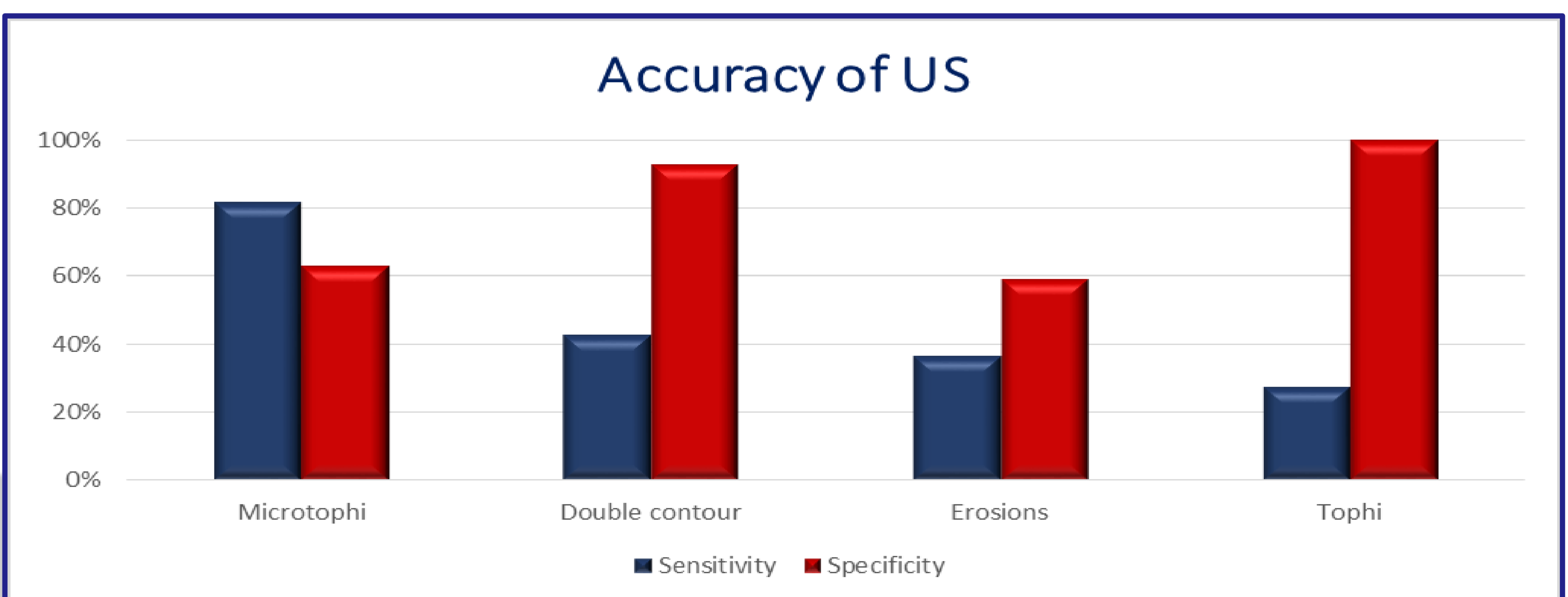


Figure 3. Accuracy of US signs for diagnosis of gouty arthritis

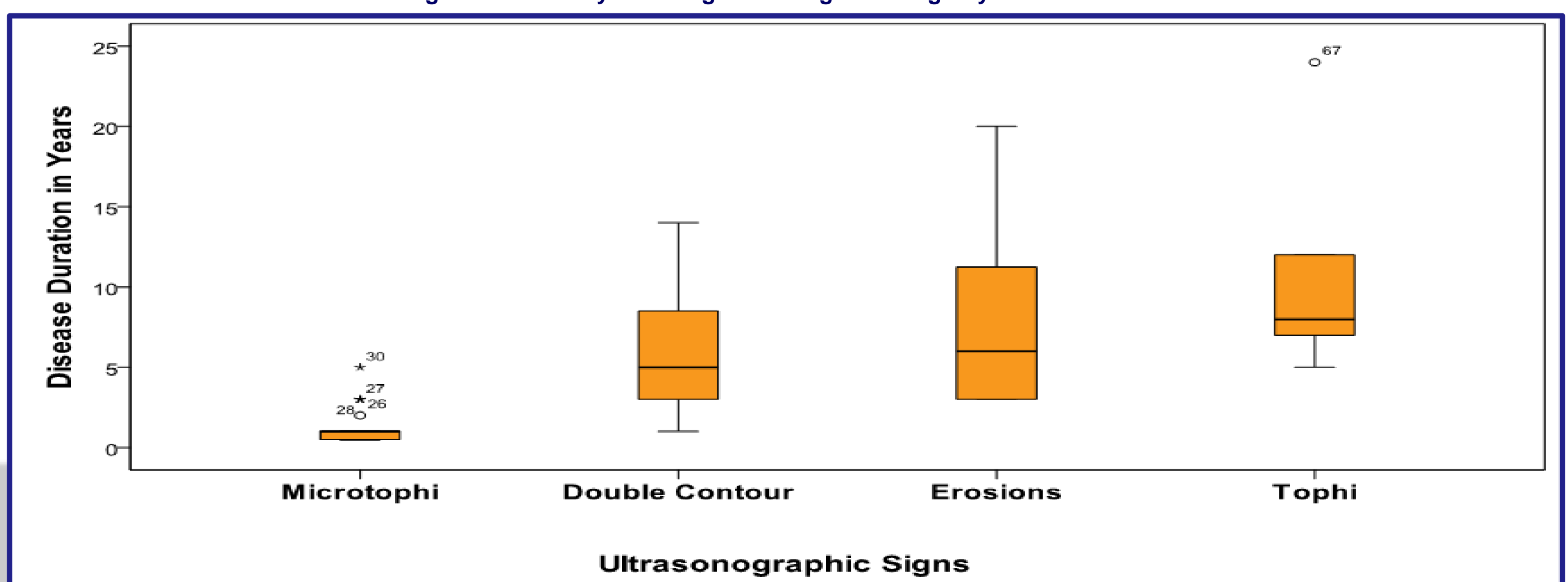


Figure 4. Different sonographic signs in relation to disease duration