Diagnostics and treatment of anterolateral rotational instability of the ankle in sportsmen

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SUMMARY

The ligamentous apparatus of the ankle is one of the most frequently injured structures of the human body. The authors emphasize the importance of careful clinical examination and present their own methodology.

They use ultrasound examination in an enforced position (5 MHz linear transducer and apparatus by Scheuba or by their own apparatus) as primary screening examination estimating stability of three articulations at the same time: talo-crural, talo-calcaneal and calcaneo-cuboid.

If the finding is positive, they concentrate furthermore on precise ascertaining of the injured joint.

A group of 86 sportsmen was analyzed. In 14 cases, the instability of the ankle was proved, in 12 cases that of the talocrural and in 2 cases that of the talocalcaneal joint.

Sonographic diagnostics of the ankle joint in an enforced position was found to be time-saveing, non invasive method.

The method is useful in diagnosis of the acute and chronic instability of the ankle.

Key words: Instabile ankle, ultrasound, enforced positions

A bokaízület antero-laterális instabilitásának diagnosztikája és kezelése sportolókon

ÖSSZEFOGLALÁS

A boka szalagrendszere egyike a test legsérülékenyebb részének. Szerzők hangsúlyozzák a gondos klinikai vizsgálat jelentőségét és ismertetik módszerüket. Tartott helyzetű bokán végeztek ultrahang vizsgálatot (Scheuba féle 5 MHz-es lineáris átalakító készülék illetve saját készülék segítségével) szűrővizsgálatként, mely egyidejűleg 3 ízület stabilitását vizsgálta, a talocrurális, a talo-calcaneális és a talo-cuboideális ízületét. Pozitív lelet esetén a sérült ízület pontos identifikálására törekedtek. 86 sportolót vizsgáltak. A bokaizület instabilitását 14 esetben mutatták ki, 12 esetben a talocrurális, 2 esetben a talo-calcaneális ízület volt érintett. A bokaízület ultrahang vizsgálata tartott helyzetben gyors és nem inváziv módszernek bizonyult, mely jól használható a heveny vagy idült boka instabilitás diagnosztikájában.

Kulcsszavak: instabil boka, ultrahang, tartott helyzetű vizsgálat

Introduction

The ankle constitutes an anatomical – functional entity in which the same important role is played by the bone structure as well as by ligaments. It is surprising, that currently, it is not entirely clear how are the anatomical and functional details referring to ankle stability. The analogical situation in the diagnostical and therapeutical treatment of ankle injuries is also in doubt. Optimal diagnostic – therapeutical processes are yet to be discovered.

Unfortunately, we often find that these injuries are minimized and not always appropriate attention is given to diagnostics and therapy. We are convinced that inexact diagnosis in many cases of injuries of soft ankle tissues is the cause of inadequate therapy, with the resulting development of negative consequences, particularly with ankle instability.

The evaluation of stability not only in the talo-crural but also in the talo-calcaneal and the calcaneo-cuboideal joints has fundamental significance for the therapy of the injured ankle. Careful clinical examination of the anterior drawer sign and the talar tilt is only the first step in the complex examination of ankle stability.

Methods

We have elaborated our own method for this examination. We use an ultrasound apparatus Ultramark with 5 MHz linear transducer and the apparatus for an enforced position in the method described by Scheuba. We use also an apparatus of our own construction.

Introduction of our method into clinical practice precedes its use in experimental work in freshly amputated legs, and vith the help of model material *(Figs. 1,2,3.)*

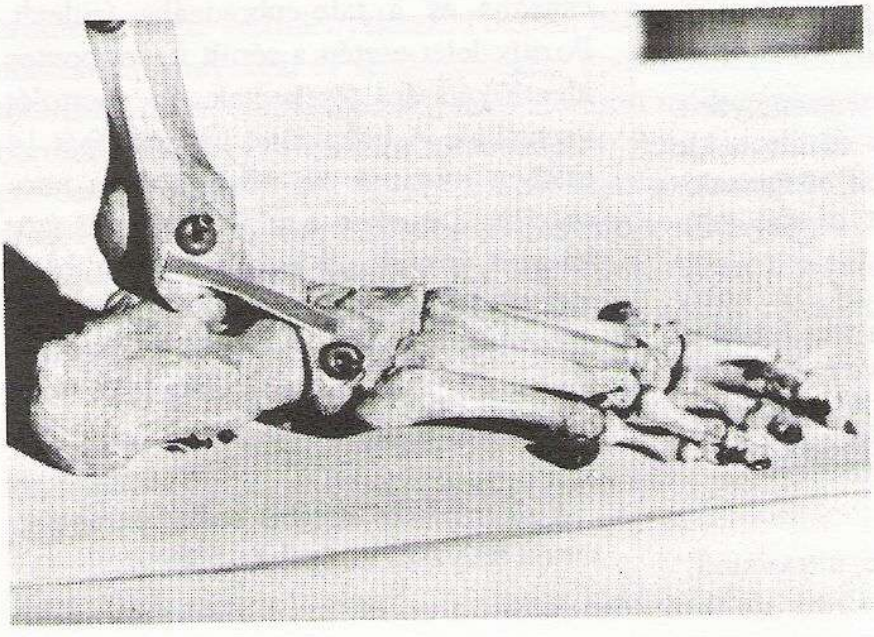

Fig. 1
Skeletal model with remarked ventrolateral approach to the ankle.

Ventrolaterális betekintés jelzése csontmodellen

Fig. 2
Schema of structures which are visible by ultrasound examination in the ventrolateral approach.

A ventrolaterális betekintéssel látható képletek sémája ultrahang vizsgálat során.

For this purpose it seems most advantageous to measure the distance with the help of ultrasound. We are using a ventro-lateral cut in which we can see: lateral malleolus, as well as at times, the talus, the calcaneus through the tarsal sinus and the margin of the cuboid bone. We measure the fibulo-cuboideal distance. which helps us in forced

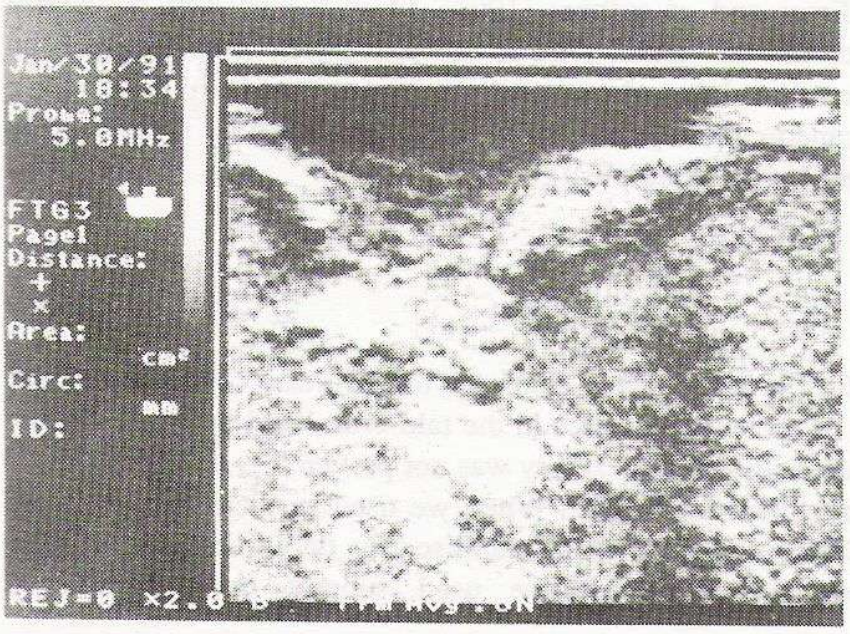

Fig. 3
Sceletal modell ultrasound examined in water medium (only bones, without soft tissues)

Csontmodell vizsgálata ultrahanggal, vizes közegben (csak a csontok, lágyrészek nélkül)

positions to evaluate the stability of the talo-crural, the talo-calcaneal and even the calcaneo-cuboideal joints. This fibulo-cuboideal distance is measured in unenforced (quiet) positions and in enforced (stress) positions. In obtained results we compared the

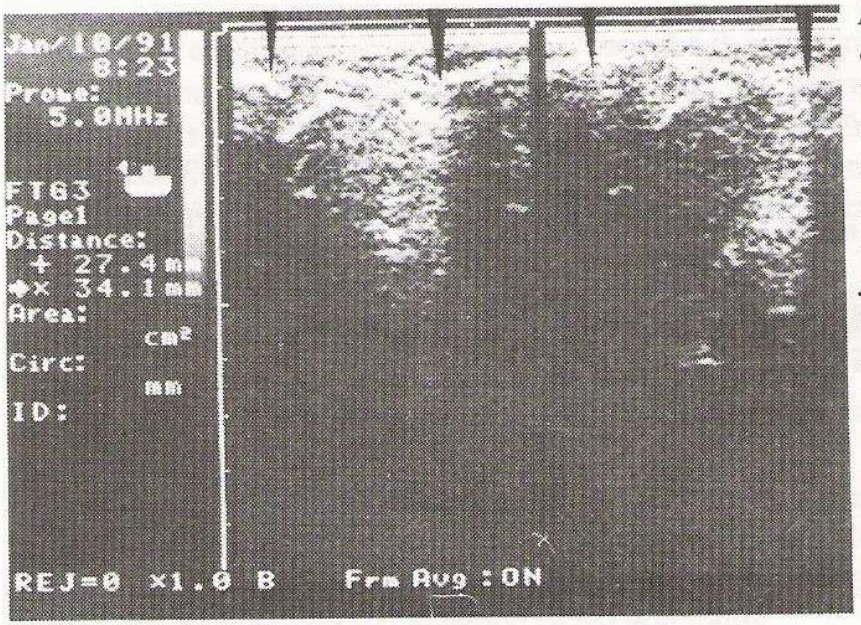

Fig. 4
Picture of the actual examination of the patient with the instabile ankle. On the left side the unforced (quiet) position, on the right side the enforced (stress) position with the forward push of the talus about 7 mm.
Instabil bokájú beteg ultrahang képe. Bal oldalon a normál pozícióban, jobb oldalon a tartott helyzetben történt vizsgálat, a talus kb. 7 mm-es előretoltsága figyelhető meg.

contralateral uninjured side. The difference, more than 3 mm in comparison with the contralateral side, we believe as positive evidence for instability *(Fig 4)*.

During the following examination we determine the injury level by the usual methods. Most frequent is the injury of the talo-crural joint. That is the reason we begin our examination with the X-rays in an enforced (stress) positions. Second possibility is an ultrasound examination by Ernst and co-authors (1990), vhith the help of the dorsal approach. If the instability of the talo-crural joint is not proven, we continue with an examination of the talo-calcaneal, and the calcaneo-cuboid joints by standard radiological methods (Zwipp-1986). Calcaneo-cuboid joint can be easily examined by ultrasound in manual enforced positions (proven by experiment).

Results and discussion

In 1990 we examined 86 sportsmen aged from 15 to 32 years. We proved the instability of the ankle of 14 of them. In 12 cases in the talo-crural and in 2 cases in the talo-calcaneal joints. The calcaneo-cuboid instability was not proven.

We performed operative treatment in 5 cases. When we used surgical approach, we performed an operation by Chrisman-Snook which stabilised the talo-crural and the talo-calcaneal joints. By conservative treatment we used support or compensatory physiotherapy.

We summarized in our paper problems of chronic instability of the ankle. Nevertheless this method can also be used in cases of acute instability. We performed this examination with local anesthesia.

It is also necessary to mention the importance of this method in the control of the stability of the ankle after the surgical treatment.

With an apparatus for an enforced positions of our own construction we reached identical conclusions as with Scheuba's apparatus.

Conclusion

The main advantages of our ultrasound screening method are that it can quickly and non invasively, without negative effects prove non-stable ankles in all levels.

References

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