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OSTEOCHONDRITIS DISSECANS OF THE TALUS: USE OF THE HIGH RESOLUTION COMPUTED TOMOGRAPHY SCANNER

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Twelve cases of osteochondritis dissecans of the talus are reviewed. The use of the high resolution C.T. scanner confirmed the diagnosis (when in doubt), and determined the precise location and extent of the lesion, thereby indicating the operative approach, and the area which required drilling.

Key words: ankle; ankle joint; computed tomography; osteochondritis dissecans

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Osteochondritis dissecans of the talus (O.D.T.) is frequently difficult to diagnose with certainty and when diagnosed the true extent of the lesion is unknown.

In order to enhance the precision of the diagnosis and to map out the exact size and location of the lesion, we have used the high resolution Computed Tomography (C.T.) scanner.

PATIENTS AND METHODS

Twelve patients with the diagnosis of O.D.T. were seen in our department between 1977 and 1980. Three patients had bilateral lesions. The diagnosis was made, or suspected, by the history and clinical findings and the plain x-ray. Of these 15 O.D.T.'s, 13 were in the supero-medial pole of the dome of the talus and two were in the supero-lateral pole. Ten were males and two females. The patients' age ranged from 17 to 40 years, the mean being 23.8 years. The duration of symptoms before diagnosis was from 6 to 24 months. All the patients complained of pain during walking and in five cases the pain remained at rest. There was no limitation of movement and no swelling of the ankle joint. A history of trauma was elicited in 8 of the 12 patients.

The high resolution C.T. scans were performed with a ELCINT EXEL 905 scanner; with the use of the planar view the scanning session was located exactly to include the lesion; slices 2 mm thick were used, thereby revealing the precise size and location of the lesion (Figures 1 and 2).

Treatment. Ten of the ankles were treated surgically (two patients refused surgery). In eight cases in which the lesion was on the medial side the approach was through an osteotomy of the medial malleolus (the malleolus was replaced using a single malleolar screw according to the standard A.O. technique). This approach gives an excellent exposure of the lesion. In the two cases in which the lesion was on the lateral side an antero-lateral approach was employed (also giving a satisfactory exposition of the lesion). All the cases were stage III or IV, according to the classification of Berndt & Harty (1959).

Four cases which looked like stage II (a partially detached osteochondral fragment) on plain x-ray proved to be stage III in the C.T. scans and therefore required operation (Figures 3, 4, 5 and 6).

In eight cases we made multiple 2 mm fine drill holes throughout the lesion through the subchondral bone into the spongy bone, producing pin point blood spots on the surface of the cartilage; in two cases loose fragments were removed.

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Figure 1. Osteochondritis dissecans on the supero-medial side of the dome of the talus clearly visualized on the plain x-ray.

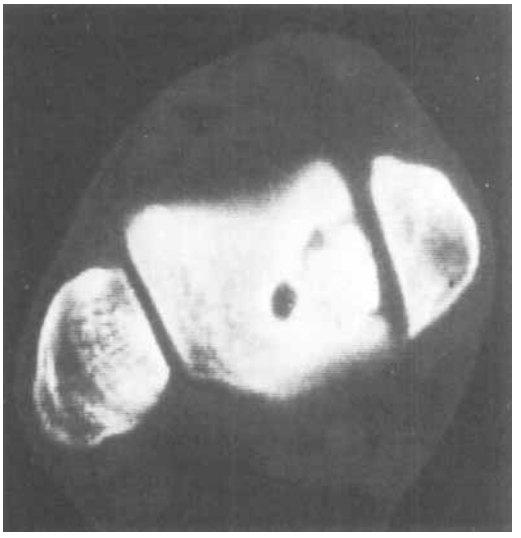

Figure 2. The same lesion seen in Figure 1 as revealed by the high resolution C.T. scanner: the full extent of the lesion is demonstrated as well as fine details such as the small "cysts".

Figure 3. A supero-medial lesion which is only vaguely seen on the plain x-ray.

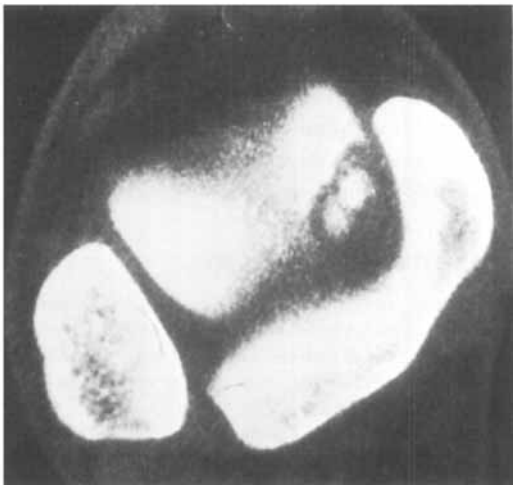

Figure 4. The same lesion as in Figure 3 as seen on the high resolution C.T. scanner: note the gross lesion and the fragmentation.

Figure 5. An apparently "normal" plain x-ray: on close scrutiny there is a suspicion of an irregularity in the outline of the dome.

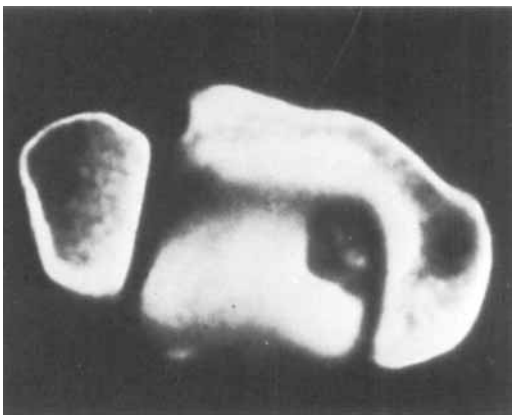

Figure 6. The same lesion as in Figure 5: an obvious "lytic" subchondral lesion is present in the superomedial dome of the talus as revealed by the high resolution C.T. scanner.

RESULTS

According to the criteria of Berndt & Harty (1959), eight results were good, one fair and one poor at follow-up 2 years after operation. In six cases an improvement was noted in the density of the lesion, and in two no change was observed on the follow-up plain x-ray.

In all cases the high resolution C.T. scanning revealed the sequestration within the lesion (Figure 4) – in three cases two or three pieces – and cyst formation that was not seen by plain x-ray or standard tomography (Figure 1).

In two cases plain x-ray showed the presence of significant degenerative arthritis but C.T. scanning revealed four cases with such changes. The extent of the lesion as revealed by the C.T. scanning was always much greater than that observed on the plain x-ray.

DISCUSSION

The plain x-ray films showed osteochondritis, but did not always show the true extent of the lesion (Röden et al. 1953), the sequestration and the cysts that C.T. scanning demonstrated in all cases. The true extent of the lesion could only be appreciated on the C.T. scan, and only with this knowledge can the operative approach be decided upon.

At operation the overlying cartilage most often looks normal and there is no way of being certain about the size of the lesion.

The area to be drilled is therefore best indicated by the C.T. scan.

We have not performed repeat C.T. scans at the follow-up because we did not feel that the additional dose of radiation was justified.

CONCLUSIONS

High resolution C.T. scanning is a very useful adjuvant to the diagnosis and treatment of osteochondritis dissecans of the talus:

(a) It allows a definite diagnosis if plain x-rays and tomography fail to do so.
(b) By indicating the precise location and true extent of the lesion a rational operative approach may be planned. (Very often the lesion is shown to be extensive on the C.T. scan and then malleolar osteotomy is indicated).

(c) In addition the area to be drilled can be determined even if the overlying "normal" cartilage masks the lesion at operation.
(d) The high resolution C.T. scan delivers a radiation dose similar to that of a tomography session but it gives clearer information and wherever possible it should replace tomography as a diagnostic procedure.

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