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Correspondence: Prof. Dr. Gertrude Eninya
 Head, Dept. of Neurology
 Riga Medical Institute
 Dzirciemo Street 16
 Riga, Latvian SSR, 226007 U.S.S.R.

PAIN FROM BONE ATROPHY (SUDECK'S ATROPHY): A CASE REPORT

F. L. Jenkner* and K. Atefie**

Zusammenfassung

Ein Fall von Sudeck's Atrophie wird vorgestellt und dokumentiert vor und nach Behandlung: Ein 56-jähriger Mann hatte nach operativer Versorgung seiner Calcaneusfraktur 6 Monate lang unbeherrschbare Schmerzzustände und die Differentialdiagnose von rheumatischer Affektion oder Knochenatrophie nach Sudeck konnte erst durch den Knochenscan (Te99m) getroffen werden. Danach erhielt der Patient durch 3 Monate hindurch tägliche elektrische lumbale Grenzstrangblockaden als Heimbehandlung. Dadurch wurde er praktisch schmerzfrei. 11 Monate nach Behandlungsende wurde der Knochenscan wiederholt und es zeigte sich ein eklatanter Unterschied (Abbildungen der statistischen Scans): vor der Therapie sehr deutlicher Aktivitätsunterschied mit starker Aktivitätsanreicherung über dem linken (verunfallten) Gelenk, Kontrolle mit nur sehr geringem Unterschied beider Knöchel. Der Patient ist völlig beschwerdefrei geworden und arbeitet voll in seinem Friseursalon.

Schlüsselwörter

SUDECK's Atrophie, posttraumatische Knochenatrophie, lumbale elektrische Sympathicusblockade, Elektroblokade, Te99m Knochenscan.

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- * Neurosurgical Clinic and Pain Clinic of the 'Ambulatorium Süd'
 - ** Institute of Nuclear Medicine of the 'Ambulatorium Süd'
- Vienna, Austria

Summary

A case of SUDECK's atrophy is reported and documented by Tc99m bone scan: a 56 year old man had an accident in August 1986. After operative repair of the calcaneus, severe pain not amenable to medication was noted and the differential diagnoses rheumatoid disease or SUDECK's atrophy was finally decided by the scan. A three months course of electric blocking of the lumbar sympathetic chain was performed, led to very great reduction of pain and 11 months after the end of therapy, a bone scan was repeated. The difference was quite evident and is shown by static films. The initial great difference in activity between both ankles almost completely disappeared and the patient now is entirely free of symptoms, working as before in his barber shop.

Key words

SUDECK's atrophy, bone atrophy, lumbar sympathetic block, electro-block, Tc99m bone scan.

Résumé

On a présenté un cas d'atrophie selon SUDECK avec une documentation avant et après le traitement: un homme de 56 ans était opéré après un accident d'une fracture du calcaneus gauche. Pendant 6 mois les douleurs ne pouvait pas être contrôlées. On a considéré des diagnoses différentielles d'une affection rhumatique ou d'une atrophie ossaire posttraumatique. Seulement un Tc99m-scan aidait à obtenir une diagnose propre. Pendant trois mois après le scan, le malade obtenait des blocages électriques quotidiens de la chaîne sympathique lombaire (traitement chez lui). Depuis ce traitement, le malade était pratiquement sans douleurs. Le scan était répété 11 mois après la terminaison du traitement. La grande différence entre l'activité des deux chevilles avant le traitement a presque disparu (voir les figures du scans statiques). Le client n'a pas de symptômes maintenant et il travaille dans son salon de coiffure toute la journée.

Mots clés

Atrophie selon SUDECK, atrophie ossaire posttraumatique, blocage sympathique lombaire, blocage électrique, Tc99m scan.

This syndrome is a combination of symptoms usually occurring in post-traumatic states, after fractures, subluxations, luxations of joints and contusions of muscles; it may also be observed following damage to nerves and after frost bites. It is named after the German surgeon P.H. SUDECK, who lived from 1866 to 1945 and who described it for the first time in the German literature. Its main symptom is patchy bone atrophy. This syndrome has its reasons in local circulatory and metabolic disturbances of one extremity (usually) with increasing symptoms and severity of complaints. The question often comes up whether a patient is suffering from a post-traumatic SUDECK's syndrome or a rheumatoid condition since laboratory changes occurring in both conditions may be surprisingly similar (except for rheuma serology). This was the case also in the patient we are going to report on here. Before we do, however, one brief statement should be made: circulatory changes are best documented by the non-invasive method of rheography (KAINDL, POLZER and SCHUEFRIED, 1967). Metabo-

lic changes in bone are best documented by bone scan using Tc_{99m} . By this technique, bone atrophy also in areas not directly bordering fracture sites have been observed. Sometimes one obtains the impression that this patchy bone atrophy is most acute and seems caused by reflexogenic events, most probably connected with the sympathetic nervous system. Therefore, some investigators are listing this type of bone atrophy under the heading of sympathetic dystrophies. Other symptoms connected with this atrophy are clammy extremity, cyanosis and edematous changes in the injured extremity, as well as a very marked limitation of function (function loss). After describing the technique we are using for a Tc_{99m} bone scan, the case shall be reported and the conclusions drawn from this experience shall be presented.

Method

A routine bone scan uses a standardized technique (FEINE, 1978); patients obtain an i.v. injection of 12-14 mCi (444 to 513 MBq) Technetium $99m$ -DPD (tetrasodium salt of the 3,3-diphosphoro-1,2 probandicarbonic acid). Three hours later a static film is exposed by the gamma-camera. Pictures are evaluated visually. In order to be able to compare films among each other, counts per exposure are being kept uniformly at 600,000; gray tones and size of films are also standardized, only duration of exposure is a variable. The set-up of the examination room is shown in Fig. 1. This scan was performed before beginning and after the end of therapy with electric lumbar sympathetic block at L-3 level. This block was performed by DC pulses reported elsewhere (JENKNER, 1986).

Case history

Our patient, a 56 year old white male had an accident with fracture of his left calcaneus on August 22, 1986. After operative repair, there was increasing pain and swelling in the left ankle. After 6 months of severe pain, during which the patient was variously regarded as suffering from rheumatoid disease or SUDECK's bone atrophy (mainly because the pain was some distance away from his fracture), the patient was put on oral pain medication which he could not tolerate well because of gastro-intestinal side effects. He therefore was submitted to a bone scan.

This bone scan showed very markedly increased activity with accentuation in areas near joints, as often is seen in cases of SUDECK's atrophy. The changes were corresponding to a stage IIA of this atrophy (see Fig. 2 1t). He then was referred to our pain clinic for evaluation. We were of the opinion that due to the changes in bone scan, there was a great amount of bone atrophy and this we related to circulatory disturbances; therefore the patient was started on daily electric lumbar sympathetic block for a period of three months. During this time, the patient had to contact us by telephone every 2 weeks if no unusual events were taking place. After this, the patient had to come to our pain clinic personally to be evaluated. In his subjective terminology, he was 95% relieved. Eleven months after the end of therapy, a bone scan was repeated at a time when the patient stated to be entirely free of pain. A comparison between first (pre-treatment) and second (14 months later) bone scan is presented in Fig. 2. It shows that there still is some change in activity of bone metabolism at the site of the former damage. But the marked difference in activity between right (normal) and left leg has diminished to a minimal difference, indicating that reparative processes continue and will be ter-

minated perhaps in another year. Now, the patient is fully active professionally in his own hair dresser and barber shop. He has no difficulties of any kind and feels that the fast recovery after the long time of suffering could almost be regarded as a miracle. In another year the plain X-ray films will be repeated and evaluated to see if another bone scan should be performed.

Summary and conclusions

A case of SUDECK's bone atrophy after a fracture of the left calcaneus is reported. At first, it seemed not quite clear whether this was a case of rheumatoid arthritis or SUDECK's syndrome. By the first bone scan, it was demonstrated that the latter was the case. Treatment by 3 months of blocking the lumbar sympathetic chain to the left leg resulted in clinical return to normal function and loss of pain, while studies on bone metabolism showed that the return to normal was not yet achieved. Improvement of bone scan was so substantial, however, that this type of patchy bone atrophy certainly is to be regarded as a sympathetic dystrophy and should be treated accordingly in all such cases. Treatment should start as early as possible and at the appearance of the first symptoms of bone atrophy of SUDECK type, a bone scan should be performed. If changes of bone metabolism are detected by this technique, electric block by proper instruments, generating DC-pulses of relatively high energy levels should be used in blocking the respective part of the sympathetic nervous system to which this lesion is to be ascribed. Therapeutic success should ensue after daily treatment for a period of between one and three months.

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Correspondence: Univ. Prof. Dr. F.L. Jenkner
Fichtnergasse 22
A 1130 Vienna, Austria.