

BONE SCINTIGRAPHY AS AN EVIDENCE OF PREVIOUS TORTURE: EVIDENCES OF 62 PATIENTS

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INTRODUCTION

Torture is a centuries old crime. Once openly practiced, in our century, it is being practiced secretly and denied consistently by numerous governments¹. Al-though at least a hundred thousand people are estimated to have been tortured in Turkey during 1980's², very few of them could bring their cases in front of a court³. Objective clues of torture are scarce and hard to collect. We, as the Ýzmir Treatment and Rehabilitation Center of the Human Rights Foundation of Turkey, had previously reported 4 torture survivors examined by us, who had pathological signs of bone scintigraphy (scan) that persisted for 5-12 months⁴.

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This imaging technique is already accepted as a precise device in evaluating abused children⁵, osteomyelitis⁶, deeply invasive soft tissue injuries such as electrical burns⁷, and especially stress fractures^{8,9}.

MATERIAL AND METHODS

Since December 1989 till the end of 1992, we examined 221 people claiming to have been tortured in detention. Sixty-two cases could be sufficiently documented. There were 52 male (83.87%) and 10 female (16.33%) patients, with a mean age of 30.89 years (range: 9-64, standard deviation: 8.76). Their mean age at the time of torture was 24.76 (range: 9-64, standard deviation: 8.10). All of them declared that they had been beaten, 54 of them being severely (87.1%). Falanga torture, beating the soles of the feet with a stick was applied to 48 (77.42%) people. Other methods of torture such as suspending on a hanger, applying electric shocks, sexual abuse, and execution, etc. were also reported by diverse numbers of patients. For more detailed descriptions of terms "beating", "severe beating" (beating with an instrument, punching or kicking) and "falanga" the reader may refer to reference No. 15.

After obtaining a detailed medical anamnesis which included the types of torture and their duration, every applicant was examined (including the psychiatric evaluation of the patient) by specialists on various disciplines, and routine investigations were carried out: Direct radiographs of symptomatic areas; computerized axial tomographies (CAT scan) of feet (falanga cases only), of vertebral column (if symptomatic or with hyperactive vertebral findings of bone scintigraphy) and of brain (if severely beaten on the head) were taken, and every patient had at least one bone scintigraphy. 15-20 mCi of Technetium 99m pyrophosphate was given intravenously and complete bone scintigraphy was taken 2.5 hours later with a "Siemens scintiview gamma camera". Any hyperactivity on bones was accepted to be positive. Hyperactivity on mandible consistent with pre-existing dental pathology was excluded. If the initial bone scan was positive, consecutive bone scans were taken during the 1., 3., and the 6. months, and once in every 6 month, until the findings became normal. Those who had applied at least a year after torture and had positive bone scans were examined every 6 month. Urinalysis, biochemical blood analyses and electromyography were conducted if necessary.

RESULTS

Twenty-six cases (41.94%) had applied 5-51 days after the torture incident (acute cases), the mean period from torture to examinations was 17.42 days (standard deviation: 14.86). Thirty-three cases (53.28%) were examined 1.5-15 years after the incident (chronic cases). The mean period from torture to examination in this group was 10.46 years (standard deviation: 2.37). The people who stated to have been tortured both in the past and recently (There were 5 such cases.) were categorized according to their latest torture date. There

were three other cases who came to us 3, 3 and 4 months after torture (undetermined or subacute). The demographic characteristics of these groups are summarized in Table 1.

Table 1: Demographic characteristics of the study population

	Female (n-%)		Male (n-%)		Total (n-%)	
Acute cases	18	69.23	8	30.77	26	100
Mean age-SD	25.00	12.49	29.63	8.50	26.42	11.61
Chronic cases	31	93.94	2	6.06	33	100
Mean age-SD	34.03	4.50	30.0	2.00	33.79	4.46
Subacute cases	3	100.00	0	0.00	3	100
Mean age-SD	30.00	7.48	—	—	30.0	7.48
Total	52	83.87	10	16.13	62	100
Mean age-SD	30.89	9.17	30.6	13.34	30.89	8.76

SD: Standard deviation.

Every patient was examined with bone scan at least once. There were 16 patients with positive scans (61.54%) among the “acute” cases, 17 patients among the “chronic” (51.52%) and all the 3 in the “subacute” group were positive, 36 positives in total (58.06%). The difference between the two major groups was not significant ($p=0.613$, Table. 2). Since the “chronic” cases had their first bone scans about 10.5 years after torture, positive scan findings in 17 (51.5%) of those 33 persons may be noteworthy.

Table 2. Bone results of the two major groups

	Bone scan + (n-%)		Bone scan - (n-%)		Total (n-%)	
Acute cases	16	27.12	10	16.95	26	44.07
Chronic cases	17	28.81	16	27.12	33	55.93
Total	33	55.93	26	44.07	59	100.00

Degrees of freedom = 1, $\chi^2=0.256$, $p=0.613$.

Falanga was reported by 32 of the 33 cases (96.37%) examined 10.5 years after torture, on the average, while its frequency fell down to 14 in 26 (53.85%) for the “acute” cases. The difference is highly significant ($\chi^2=13.33$ and $p=0.0002$). This indicates that this primitive and very painful method of torture has lost prevalence in Turkey.

Follow-up Cases

Among the 62 survivors, we could follow-up 12 (19.36%) of them for a mean duration of 13.08 months (range: 1.5-31+, standard deviation: 8.99). Out of the follow-up cases, 8 were from the "acute", 3 from the "chronic", and 1 was from the "subacute" group. Bone scans of the two acute cases normalized in 1.5 and 15 months, whereas they were still persistently pathological for the other 10 patients at the end of a mean duration of 13.40+ months (range 4-31+, standard deviation: 9.80). At the end of the follow-up period, the mean duration of persistently positive scans for the 8 acute patients was 16.25+ months (range: 4-31+, standard deviation: 11.08).

Tortured Children

There were 4 boys who applied to us 22-51 days (mean: 42.0, standard deviation: 11.90) after torture. Their ages were 9, 12, 13 and 13. All of them reported severe beating, *falanga* was noted in 3 of them. Two of the children had positive bone scans consistent with *falanga*, on the 22. and 51. days. The child with positive bone scan on the 22. day had persistent pathological findings 4.5 months later.

DISCUSSION

There were 552 cases of torture in Turkey in 1991 and tortures on 218 of them were confirmed by medical authorities³. The number of applicants to our branch in İzmir until the end of 1992, summed up to 221. Torture survivors are kept in detention until visible signs disappear, and their demands for their legal rights were suppressed. Health care professionals do not know about torture, moreover, some of them are even in collaboration with torturers^{10,11}. Sustained clues that can stand the erosion by time are the most important. As we focused our attention on the victims of recent torture, it soon became apparent that bone scan was a good candidate. Previous studies in the medical literature, which may come closest to ours, mostly deal with stress fractures and serious soft tissue injuries. It is stated that any disorder that increases blood flow will cause a relative increase in bone uptake¹². Scan becomes positive earlier than the conventional radiographs, and recovery starts in two weeks and turns into a normal image most probably within 4-6 months, at the least, and at the end of 2 years for most of the patients^{13,14}. Exceptional cases may have positive scans persisting for about 30 years¹².

It is not surprising to find pathological bone scan findings among persons who were severely beaten. *Falanga*, accompanied by muscular damage, is locally more provocative. Many of our cases who stated to have been subjected to *fa-langa* torture and applied to us soon after the incident, had typical hyperactivity, which remained positive for a long time, at their metatarsal bones (11 of the 14 *falanga* victims -78.57%). Since *falanga* is a prevalent form of

torture in the Mid-dle East¹⁵, this strong relation and long-lasting objective clues may become legally acceptable. However; we must note that among our recently tortured "acute" patients, about 20% of falanga cases (40% on the whole) had normal bone scans. Searching for specific signs¹⁶ or using more sophisticated devices such as triple phase 99m Technetium bone scan, or magnetic resonance imaging¹⁷ may increase the sensitivity. Our first impression of CAT scan is also encouraging. Meanwhile, as the statistically significant difference between our two major groups implies, frequency of falanga torture has somehow declined in Turkey. Our group of "chronic" cases was composed of people interrogated and imprisoned at the time of the 1980 military coup. They spent about 11 years in prisons, where torture and ill-treatment were so prevalent, and they were released on parole between April and August 1991. All of our cases reported repeated and severe beating and various forms of torture. Falanga was experienced by all except one. In some cases, sum of the total time under torture was even hard to conceive (194 days for one case, 450 days for another, etc.), and due to the enormous time gap, this parameter was not considered. The bone scans of 17 of these 33 chronic patients (51.52%) showed various combinations of hyperactive spots on costae, scapulae, vertebrae, knee joints and metatarsal bones. When three patients were re-examined 8-12 months later, the positive scans were still existent. Positive bone scan lasting for more than 3 years is very rare^{12,14}, therefore such a high ratio (more than 50%) of pathological results is noteworthy.

Persistence of bone scan abnormalities for a very long time is hard to explain. Muscular necrosis does cause hyperactive spots but does not persist for this much long⁷. Until recently, the investigators were more interested in its contribution to the diagnosis of occult fractures rather than their persistence as a clue. It has been proposed that "a continuing increase in metabolic activity, increased vascularity or other processes"¹⁴ may give way to persistent positive scans.

Falanga torture and severe beating may cause -perhaps irreversible-periosteal reactions that could not be detected with conventional radiography. Radionuclide studies, on the other hand, may determine these metabolic and vascular pathological changes evolving locally.

There are various methods of torture¹⁵. Trying to prove its existence and determine its physical sequelae on every occasion would be a futile task. Even bone scan may draw negative results in about 40% of recently tortured individuals. Helping torture victims and struggling against its practice is one of the responsibilities of medical profession, but eradication of torture from society requires wide scale international efforts.

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