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Introduction:

Heterotopic ossification (HO), a disabling condition of mature lamellar bone formation in soft tissues, particularly periarticular, may complicate the course of thermal injury¹. Despite significant improvements in burns care, effective prevention of HO is still lacking. Epidemiological analysis of the phenomenon including optimal diagnosis approach is a preliminary condition for future therapeutic perspective. The aim of this retrospective study was to identify early risk factors for HO.

Methods:

We reviewed 537 adult patients (over 16 years old) admitted to the Burn Unit from January 2000 to December 2006. In order to focus on high risk patients, minor injuries, defined as length of stay shorter than 30 days, were excluded from the study.

Clinical (ankylosis and pain) and radiological (X-ray, body CT, bone scintigraphy) signs of HO involving the 6 major member joints were retrieved in the medical records.

Patients were divided into two groups according to presence (HO) or absence (NHO) of heterotopic ossification. Characteristics of the population studied are shown in table 1.

	Group NHO		Group HO	
	N (%) = 82 (86.3)		N (%) = 13 (13.7)	
Age (years)	47.3	(17-89)	41	(16-69)
Male gender (N, %)	58	(70,7)	11	(84,6)
Time in the Unit (days)	49.5	(30-202)	95	(58-215)
TBSA (%)	30	(4-95)	45	(5-95)
TBSA 2nd degree (%)	21	(1-95)	30	(1-71)
TBSA 3rd degree (%)	7.5	(1-35)	20	(3-45)

Table 1 - Characteristics of the population

Twelve biological variables among which proteinemia, hemoglobin, serum alkaline phosphatases, serum myoglobin and C-Reactive Protein were collected during the 28 days after injury.

Multivariable analysis was applied on the data.

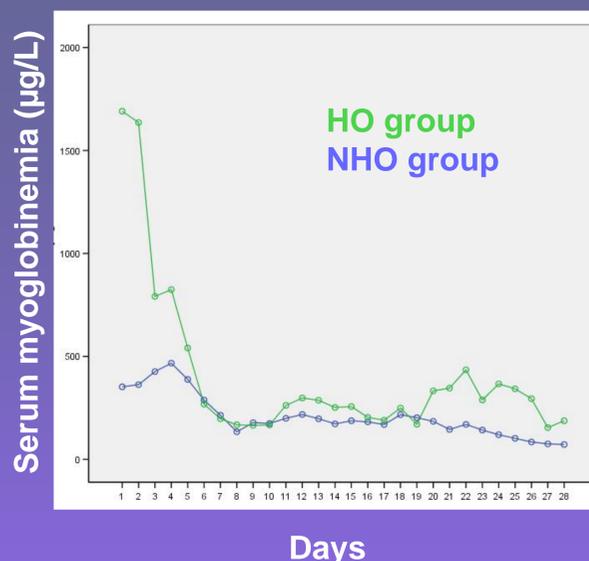
Results:

Of the 95 patients who met the inclusion criteria, 13 (13.7%) had clinical and radiological signs of HO confirmed by scintigraphy (Table 1). In the OH group, the most frequent anatomical sites involved were, in decreasing order : shoulder, elbow, knee, hip and ankle. (Table 2)

In the multivariable model, the percentage of third-degree burns (OR : 1.19 ; 95%CI : 1.06-1.34) and the serum myoglobinemia (OR : 1.08 ; 95%CI : 1.02-1.13) during the first 4 weeks were significantly associated with the presence of the HO.

Joint	Group HO
	N=156
Burned joint N (%)	85 (54.1)
Total OH N (%)	44 (28,2)
Shoulder	16 (10,2)
Elbow	15 (9,7)
Wrist	0 (0)
Hip	3 (1,9)
Knee	8 (5,1)
Ankle	2 (1,3)

Table 2



Conclusions:

Our study indicates that the incidence of HO has not declined over recent years and is higher than 10% in high risk patients as of Munster's study² showed.

Because clinical and radiological signs are late manifestations of HO, myoglobin level during the 1st week could be useful for early detection of patients at risk.

References:

¹ Richards et al. Burns 1997;23:64-68

² Munster et al. J Trauma 1973;12:1071-1074