



## STUDY OF PAST MEDICAL HISTORY IN PROFESSIONAL INORGANIC LEAD INTOXICATION

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**ABSTRACT.** The easier clinical guidance for inorganic lead intoxication is the method of past medical history. The professional past medical history with 21 points, common medical history and social history gives us clear information in lead intoxication. Studying 91 patients with inorganic lead intoxication who were admitted to Occupational Health Clinic in Targu Mures County Hospital for a period of 11 years and studying these information we can conclude the following: the patients have had most often moderate or severe intoxication with fatigue, head-ache and irritability as major complaints. More than half of the cases the intoxication starts with myalgia, constipation and weight loss. Saturnine colic is common at most of the patients. Gastrointestinal symptoms accompanying saturnine colic is considered most often like an early indicator in lead intoxication and not necessarily followed by saturnine colic. Pseudo-rheumatic syndrome is present mainly in patients with concomitant renal disease. Also, the paraesthesia is an early sign of peripheral neuropathy in lead intoxications.

**Keywords:** lead, intoxication, occupational, history, symptoms

### INTRODUCTION

High levels of lead exposure affects almost all body systems, primarily being affected central nervous system, kidney and hematopoiesis system, culminating with death, at the excessively high levels of exposure. At low levels of exposure are affected hem synthesis and other biochemical processes, also psychological and neurobehavioral functions.

Based on occupational past medical history and common past medical history there can be found important information for suggesting inorganic lead intoxication diagnosis.

### MATERIALS AND METHODS

The study is a retrospective one, being involved 91 patients hospitalized in Occupational Health Clinic of Targu Mures County Hospital, between 1 January 1996 and 31 December 2006, with confirmed diagnosis of "chronic occupational inorganic lead intoxication".

Our work consisted in processing information from individual medical records of the 91 patients, considering professional past medical history and common past medical history.

The processing of information was made using EpiInfo software and Microsoft Excel 2007.

The data were analyzed using the following summary statistics tests: measurement of central tendency (mean and median, frequency), the measurement of variability (minimum and maximum range, percentiles distribution, standard deviation).

### RESULTS AND DISCUSSIONS

Studying figure 1 we can see that most of the patients were diagnosed between 1996 and 2006, it means a representative period of 11 years, being classified by symptoms and clinical features in the category of

moderate or severe inorganic lead intoxication, being almost 79.11% of all studied cases (figure 1).

Figure 2 presents the incidence of various symptoms posed by the patients hospitalized with professional inorganic lead intoxication, which is confirmed by history, or later.

The fatigue is often almost universally present in the study (94.5% of patients). Other central nervous system-related symptoms were founded with a very high frequency, but it can be linked with hematopoietic system. So, headache was found in 83.51% of patients and irritability in 70.32% but both can be symptoms of anemia (which can coexist, or can be caused by exposure to lead).

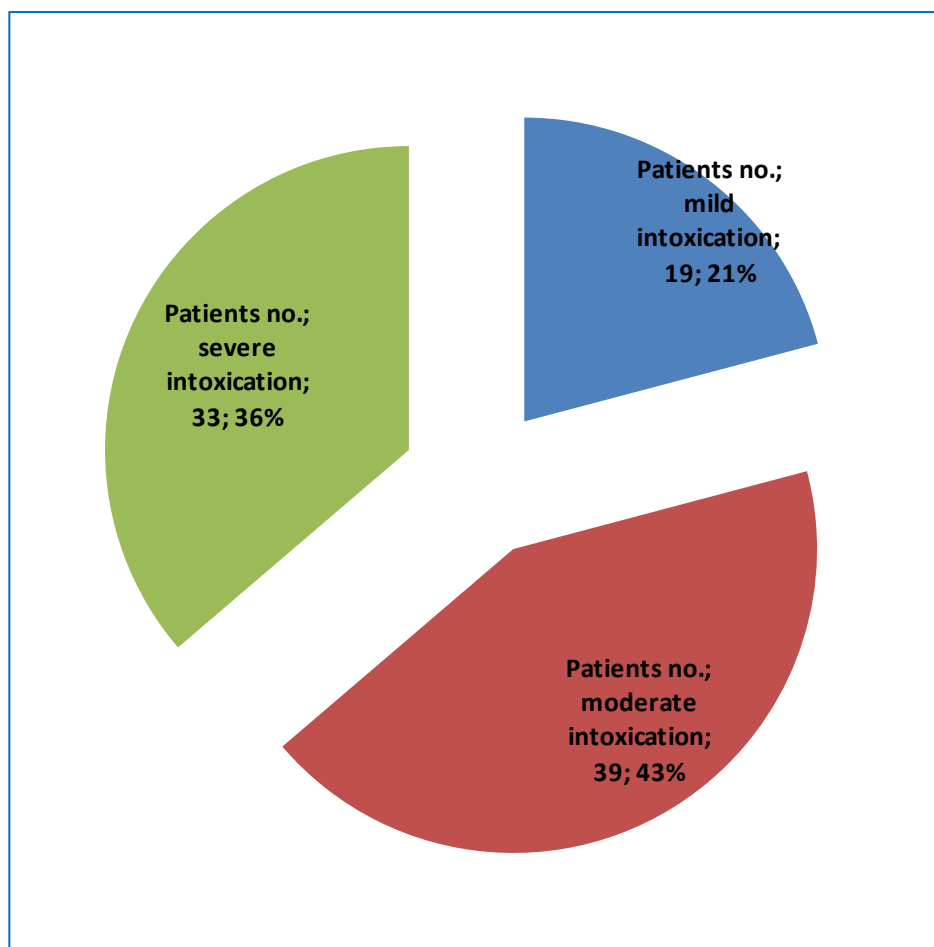
Further, myalgia was common in 63.73%, which advocates for competition between urinary lead and intracellular Ca<sup>++</sup>. Paresthesia was found in 47.25% of cases as an earlier signs of neuropathy. Constipation (or diarrhea, if applicable), weight loss, diffuse abdominal pain syndrome (around 30% of patients) can result from digestive effects of lead.

Saturnine colic has occurred in 38.46% of patients, a value correlated quite well with the incidence of severely occupational intoxication with inorganic lead (approximately 36.26%). Saturnine colic often appears in severe intoxication with inorganic lead together with exacerbation of symptoms, or worsening of symptoms / symptom groups (ex. asteno-vegetative syndrome, digestive syndrome, neuro-psychological, hematological and cardiovascular, etc.). It was accompanied by other gastrointestinal symptoms such as constipation (34.06%), nausea, vomiting (31.86%). Not all the cases with intermittent abdominal pain have progressed into severe abdominal colic, only 6.61% of them, thanks to the effects of therapy (figure 3).

Pseudo-rheumatic syndrome, which occurs in approximately 17.58% of the patients is also present particularly in patients with concomitant renal disease.

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**Fig. 1** The incidence of severity of inorganic lead intoxication in the studied group of patients

It can be seen from figure 4 that there is a very common combination between colic saturnine and hematological abnormalities. In 97.14% of patients with colic saturnine we meet also hematological abnormalities.

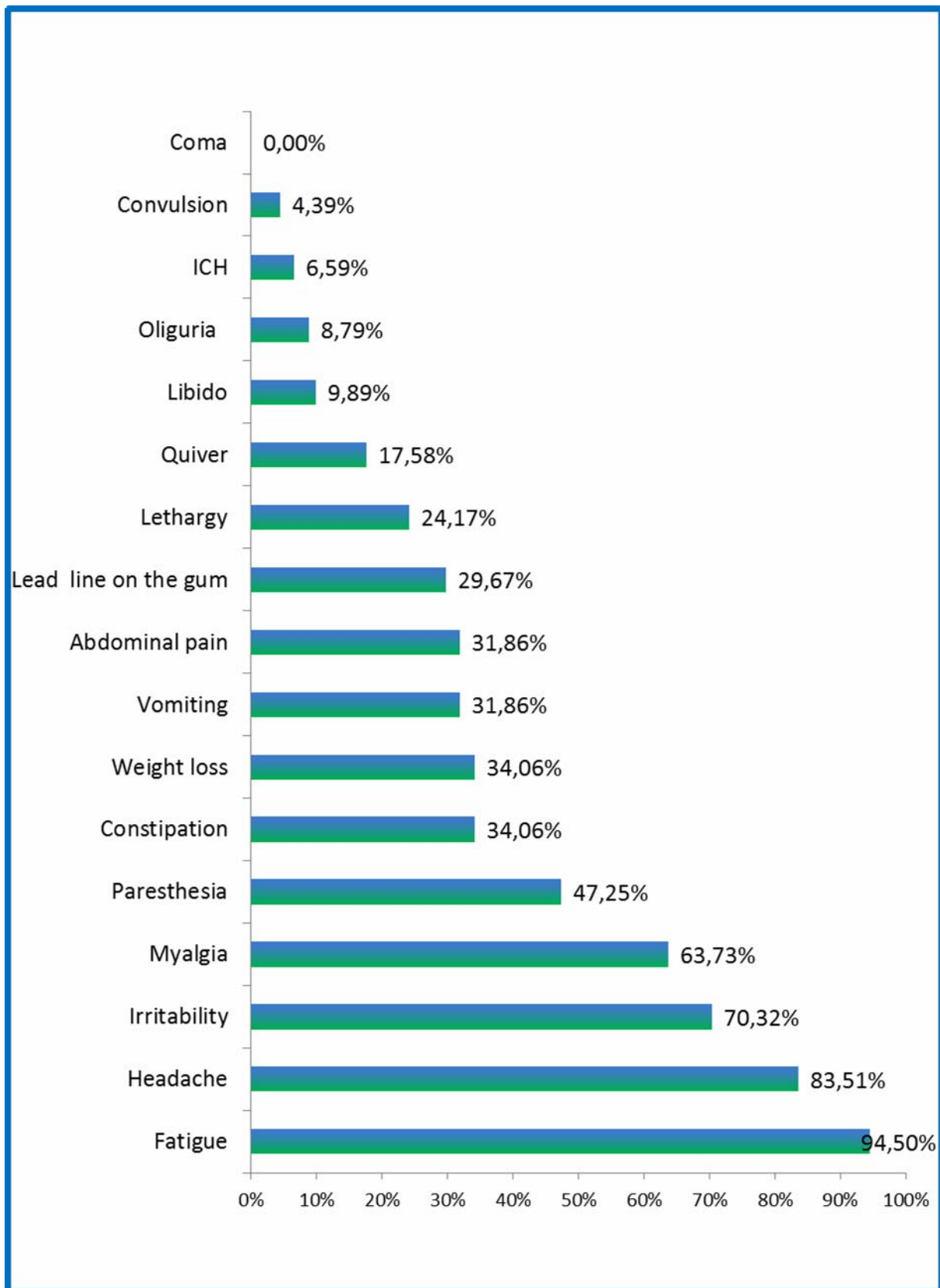
Patients with mild intoxication, who required hospitalization we have met only in 20.87% of cases. Hence we conclude that professional inorganic lead intoxications comes to be diagnosed only when clinical manifestations appears serious, but there are many patients with increased lead values in blood (over 50 mcg / dl) with no sign of intoxication, and when they are going to a doctor, they already have complications or impairments of various organs and systems due to the increased lead storage that they have in their body. (Szasz, 2008)

This shows again the need for implementation of screening methods and early treatment programs in inorganic lead intoxication. In this way the workers reach to be treated in earlier stages of neuropathy, hemopathy, hepatopathy caused / aggravated by inorganic lead and that will decrease the incidence of severe intoxication, especially if it will be implemented successfully and

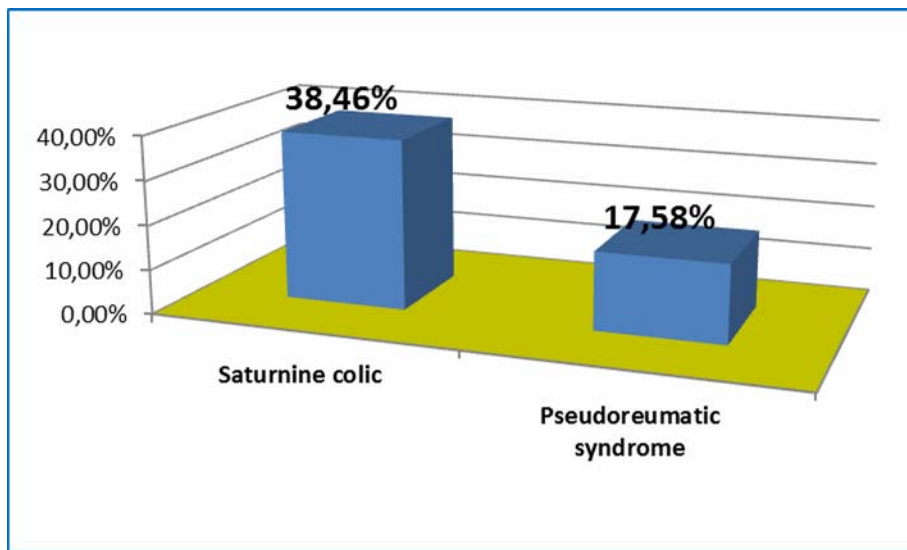
it will have a continuing medical education programs of worker's risk in exposure to anorganic lead (Szasz, 2008).

The gum lysereum, although quite sensitive in inorganic lead intoxication, it appears only in 29.67% of patients, seizures and increases in PIC are very rare, occurring in 5% (probably due to administration of chelating therapy before they arriving here), the incidence of decreasing libido is not too high, only in 9.89% of patients (or patients do not report such symptoms for cultural reasons, or because they have "shame on it"). Highest specificity (in conjunction with positivity of professional history) it seems that it have lysereum gum, paraesthesia, decreased psychomotor performance, abdominal colics and myalgia (Cocârlă, 2008).

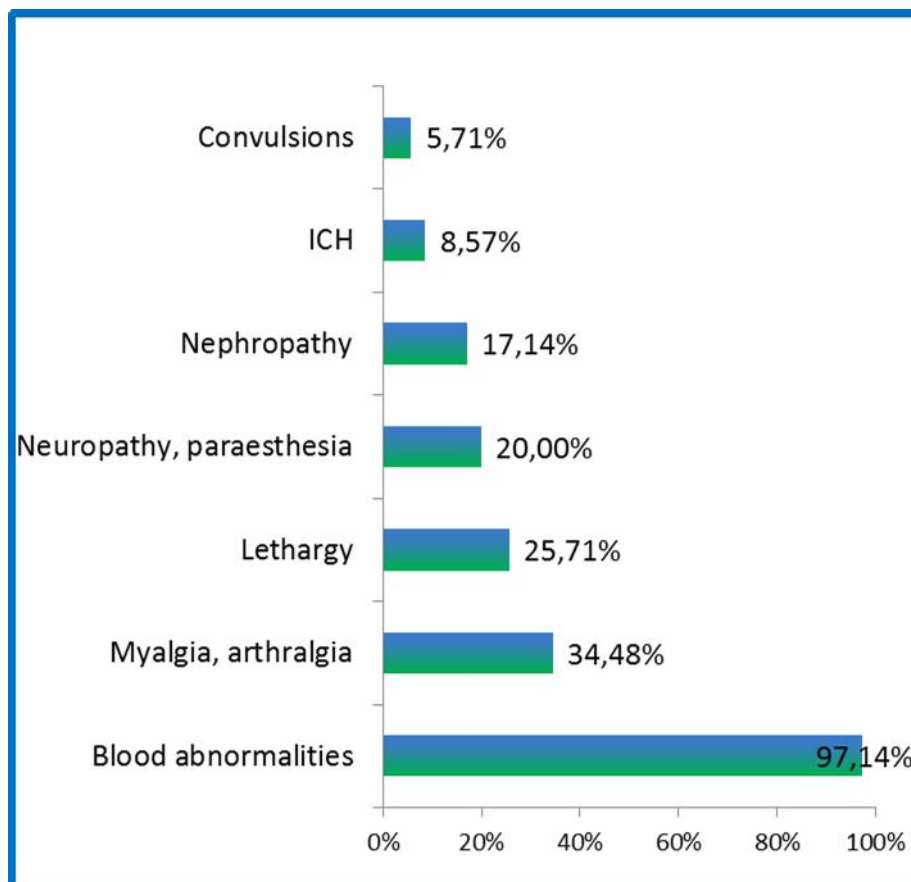
However, it is always important to ask the patient about living and working conditions (questions targeted on metallurgical activities, pottery, dyes and pigments, etc.) especially if he comes in our service with violent periombilical colical pain that disappears on deep palpation, accompanied by nausea, vomiting, metallic taste in his mouth, or constipation (Toma, 2008).



**Fig. 2** The incidence of symptoms in patients with occupational inorganic lead intoxication



**Fig. 3** The incidence of saturnine colic and pseudoreumatic syndrome in studied patients



**Fig. 4** The incidence of other pathological conditions in the study group

Very interesting is the occurrence, in some cases, both of oliguria and saturnine colic (signs of renal impairment, which can lead to kidney failure) in approximately 3.21% of total cases and 36.51% of cases of colic saturnine, suggesting the possibility of

significant renal toxicity, when the levels of lead in blood (or bone reserves) causes the intestinal smooth muscle contraction.

Regarding the pseudo-rheumatic syndrome, a characteristic of it is a frequent association with

nephropathy (unless classical gout - about 50% of patients with nephropathy have at the same time pseudo-rheumatic syndrome) while the symptoms are more severe and acute than those of non-saturnine hyperuricemia.

## CONCLUSIONS

The patients admitted in the Occupational Health Clinic with a diagnosis of inorganic lead intoxication had fatigue, headache and irritability as the most often complains.

In about a half of the cases the disease starts with myalgia, constipation and weight loss.

The saturnine colic occurred in almost half of the patients.

Pseudo-rheumatic syndrome was present mainly in patients with concomitant renal disease.

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