Transient loss of the Y-chromosome in an elderly man with anemia and lead poisoning: Chance occurrence or a clonal marker of the underlying hematological abnormality?

One of the most important environmental and occupational pollutants is lead. Cytogenetic damage is known to occur to many individuals exposed to lead, e.g., outdoor and car painters, traffic policemen, gasoline station attendants, etc. Chronic lead exposure affects many organ systems leading to a gradual decline in the so-called safe blood lead levels over time.

We report a 60-year-old man who presented with pallor and abdominal pain. Clinical examination showed mild hepatomegaly without splenomegaly. Laboratory investigations revealed leukocytes 6,700/µL with normal differential, hemoglobin 10.9 g/dL, hematocrit 32.7%, MCV 88.8 fl, MCH 29.6pg, platelets 281,000/µL, total bilirubin 0.44 mg/dL and LPDH 181IU/L. Examination of the peripheral blood smear showed extensive basophilic stippling, while a bone marrow examination revealed dyserythropoiesis with intense basophilic stippling of the bone marrow red cell precursors. Bone marrow cytogentic results showed loss of the Y chromosome in 3 out of 20 metaphases. On questioning the patient, he admitted consuming large amounts of a local self-made spirit called raki. Since this spirit is frequently produced into lead-containing boilers, we suspected chronic lead poisoning and measured lead levels in his blood. Indeed, a high blood lead concentration (75 µg/dL) was detected (upper level of normal for blood lead in our laboratory 20 µg/dL). To investigate the matter further, we confirmed a high lead content (17 mg/L) in a sample of the raki he used to consume. Although there are no official upper limits for raki lead content in Greece, the raki lead concentration in our case was much higher than the local upper limit set for wines (0.2 mg/L) or for other spirits in countries of the European Union. For example, in Ireland for drinks and cocktails the limit is 0.5 mg/L, while in Germany the upper limit for wine and its products is 0.3 mg/L. Since dimercaptosuccinonic acid is not commercially available in Greece, we decided to treat our patient with penicillamine 500 mg bid for 2.5 months and measured lead levels in his blood. However, since lead poisoning is well-known to cause anemia and dyserythropoiesis and since hematological and cytogenetic findings in our elderly male patient were transient, the diagnosis must be considered to be the result of an association of lead and alcohol to cytogenetic abnormalities in the face of aging and suggests that elderly patients with anemia should be investigated for potentially treatable occupational and/or environmental exposures.

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References