

Frequency of Monoclonal Paraproteins in 9,309 sera from blood donors in Macedonia, Greece*

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Summary

The frequency of monoclonal paraproteins in blood serum depends on certain parameters such as the age and the health of population, as well as on the sensitivity of the applied techniques.

In people with clinical symptoms, the frequency is very high (74%), whereas in healthy humans, like blood donors, it is low (1%).

The most practical and safe technique to detect monoclonal paraproteins, is electrophoresis. For the identification of the monoclonal immunoglobulins, monospecific polyclonal antisera are used by immunofixation and/or immunoelectrophoresis.

Monoclonal paraproteins in the electrophorogram may indicate malignancy in progress. In each case of paraproteinemia, the class of heavy chain and the type of light chain should be identified and the case must be followed systematically.

The use of immunofixation in cases of monoclonal paraproteinemias ensures the diagnosis of malignant disorders of B lymphocytes up to 99%.

According to the existing literature, our paper is the first one, which investigates the frequency of paraproteinemias in Greece.

We electrophorised 9,309 blood donors' sera from the area of Macedonia during a period of 8 months. The sera were diluted 1:4 and electrophorised on agarose films in barbital buffer, pH 8.6, 20 mins/100 volt (from Hellabio Laboratories).

Eighty out of the 9,309 examined samples, showed some abnormalities on the electrophorogram. The band of most monoclonal paraproteins appeared in the gamma region and especially in the area of fibrinogen. We examined sera and not plasma. So, we had to distinguish and identify these monoclonal bands by immunofixation. We used Hellabio's immunofixation KIT, with monospecific polyclonal antisera to heavy chains of IgG, IgA and IgM, as well as anti κ - and anti λ (bound and free) light chains. Ten out of 80 cases with some monoclonal anomaly on the electrophorogram were found to react with one of the used monospecific antisera. Especially 6 of these belonged to IgG κ -chain, 3 belonged to IgG λ -chain, and 1 serum belonged to IgA κ -chain. The remaining seventy cases were not investigated with anti IgD and anti IgE antisera but they were considered to be the result of the remainder of non completely precipitated fibrinogen. The blood of two out of ten pathological cases were discarded, while the other 8 blood units were used for transfusion.

The probable risk of blood transfusion with monoclonal paraproteins in healthy humans is not clear enough. However, pathological or suspicious biological products, like blood with monoclonal paraproteins, should not be used in humans.

It is worrying that the frequency of malignancy has been increasing during the last decade. It is sure that some cases of paraproteinemias indicate malignancy and that the role of the transfusion of bloods with monoclonal paraproteins is not clear enough. Because of these factors it seems useful to examine all bloods of donors by electrophoresis. In this way, the bloods with monoclonal paraproteins will be discarded, while the suspicious blood donors in time will undergo special laboratory and clinical tests.