Post arthroplasty blood toxic metal profile
Blood levels of cobalt, chromium, manganese and molybdenum after hip replacement

September 2010

With the introduction of new materials for surgical prostheses, joint replacement has become the operation of choice for the treatment of chronic hip problems. Other joints, such as the knee, can also be treated in this fashion. However the potential for long term complications from metal toxicity, metal hypersensitivity, and metal carcinogenicity after these operations are causes for concern, since they usually involve the implantation of a prosthesis made from a metal alloy into the tissue of the subject. Since the metallic surface is subject to wear and degradation (and needs replacing or re-surfacing after a period of years) there is metal leakage into the tissues. The particular nature of the prosthesis used, as well as other factors, can affect the rate of leakage. Also it is now suggested that more than 50% of all joint arthroplasties will, by the year 2011, be performed on patients of less than sixty-five years of age. This projection has a number of implications for joint arthroplasty procedures and their follow up.

Little is known about the long-term systemic effects of enhanced levels of these metal components in the extra-cellular fluid. At the present time there is no defined and confirmed risk involved, but as patients live longer carrying metal prostheses, the risk potential becomes more apparent.

A prudent approach is to monitor the blood levels of the component metals, probably annually. Biolab is offering a blood profile involving measurement of chromium, cobalt, manganese and molybdenum – whole blood being the specimen of choice in this situation. This will help in the risk assessment to such patients, who may subsequently require metal resurfacing operations or further implants.

Turn-around time

This analysis is carried out weekly in the laboratory, according to demand.

References:

1. Langton DJ, Sprowson AP, Joyce TJ et al. A comparative study of articular surface replacement and Birmingham hip resurfacing arthroplasties. Journal of Bone and Joint Surgery 2009;91-B:1287-1295.

2. Antoniou J, Zukor DJ, Mwale F, Minarik W, Petit, A 2008. Metal ion levels in the blood of patients after hip resurfacing: a comparison between 28 and 36 mm-head metal-on-metal prostheses. Journal of Bone and Joint Surgery;90:142-148.

• The Stone House • 9 Weymouth Street • London W1W 6DB England • Tel: (+44) 020 7636 5959/5905 • Fax: (+44) 020 7580 3910 • Email: info@biolab.co.uk •