effect of LKM-3 antibodies since it requires the physical presence of the antigen on the hepatocyte surface.

Tissue damage independent of its origin leads to the release of intracellular components taken up by phagocytic cells. Such antigen-presenting cells process and present exogenous antigens to T cells via the HLA class II pathway and trigger a sequence of events leading to tissue inflammation and/or antibody production. Such a mechanism probably accounts for the presence of antmyocardial antibodies after myocardial infarction, not disproving the ischaemic origin of tissue damage. Ritter's conclusion that "with identification of the LKM-3 antigen in hepatitis D as a UGT, the issue concerning the role of autoantibodies in disease progression may now be resolved" seems premature and misses the point. Which of us would classify and explain acute myocardial infarction as an autoimmune disease based on the presence of antibodies specific for a molecularly defined autoantigen?

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Therapeutic botulinum toxin

StR—Differences in intrinsic properties between the two sources of botulinum A toxin have been recognised in clinical reports, and might add to understanding of how to improve this useful therapy. Consistent discrepancies in dose requirements have been reported for Botox and Dysport. Reasons for these discrepancies have not been given and potentially dangerous side-effects could result if the clinician interchangeably confuses the mouse unit doses for each preparation. In view of these clinical observations, it is hard to agree with Pickett and Hambleton's comments that the mouse bioassay provides an absolute determination of potency (Aug 13, p 474).

The mouse lethality unit evaluates the potency of botulinum preparations as toxins, which is not how the material is used clinically. Botulinum is used by clinicians to produce regional denervation in hyperactive or dystonic muscle groups. Observations in clinical studies have indicated that (1) regional denervation might not be consistently predicted by the mouse unit because dose requirements in mouse units are not constant with different sources of botulinum toxin (e.g., Dysport, Botox, botulinum F toxin); and (2) duration of denervative effects is not predicted by the mouse unit.

Differences in botulinum toxin preparations are more profound than numerical dose adjustments. Review of publications strongly suggests differences in complication rates between various preparations. In adult-onset spasmodic torticollis, the frequency of dysphagia is greater for Dysport (British preparation, 28%" and 44%" than for Botox (American preparation, 9.5–17.7"). Reasons for variations in complication rates are not clear but might relate to differences in bioactivity between botulinum A toxin preparations not recognised by the mouse lethality bioassay.

It is the responsibility of physicians and surgeons to search for reasons for differences in dose requirements between botulinum preparations, non-uniformity of mouse units noted with different preparations, and drug formulation issues influencing patient safety.

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Pure red cell aplasia caused by chlormadinone

StR—Acquired pure red cell aplasia (PRCA) is associated with many disorders such as haemolytic diseases, infection, malnutrition, and neoplasms, as well as drug therapy. Cellular and/or humoral immunity against bone marrow red cell precursors have been found in some cases. Drug-induced PRCA is a rare cause of acquired forms of PRCA, but unlike most causes it is usually acute and reversible upon withdrawal of the causative drug. Various drugs are recognised to cause PRCA in some patients including antimicrobial agents, antidiabetic drugs, anticonvulsants, and non-steroidal anti-inflammatory drugs. We report a case of PRCA that developed after use of a synthetic progesterone derivative chlormadinone acetate for benign prostate hypertrophy.

A 72-year-old man with no previous history of blood disorders was admitted in January, 1994, with severe dyspnoea on effort. Diagnosis of PRCA was established with normocytic normochromic anaemia with reticulocytopenia (1.54X1012/L red cells, 49 g/L haemoglobin, 14.4% packed cell volume, and <0.1% reticulocytes) but with normal leucocytes (4.5X109/L white cells; 61% neutrophils, 27% lymphocytes, 10% monocytes, and 2% eosinophils) and platelet counts (352X109/L), and a bone marrow with the selective absence of erythroid precursor cells (136X106/L nucleated cells) and 0.8% erythroblasts. The erythropoietin concentration was raised (151-1 MIU/mL). The history revealed that chlormadinone had been administered (50 mg per day) since the beginning of September, 1993, for benign prostate hypertrophy. It was the only medication he had taken in 10 years. Anaemia was not present before administration of the drug and was exacerbated progressively thereafter (table). Serological evidence of acute infection by parvovirus B19, Epstein-Barr virus, and hepatitis B virus was absent, and no neoplasms were found. Thus, chlormadinone was the most probable aetiological agent of PRCA in this case. Therefore, chlormadinone was withdrawn on Jan 17, 1994. The reticulocyte count remained low for 11 days, but an apparent rise was recognised 15 days after cessation of the drug (table). Bone marrow features on Feb 15 showed substantial improvement (215X109/L nucleated cell count and 25.2% erythroblasts). Red blood cell transfusion was done on Jan 7, but was not required thereafter. Despite cessation of anaemia progression and high reticulocyte counts, the recovery in haemoglobin concentration was very gradual.