RHESUS FACTOR

POLICY STATEMENT:

- The provision of bone allografts to females who are child-bearing age or younger and who are RhD-ve should be undertaken with caution.

- Australian Biotechnologies policy is that all surgeons requesting bone allografts for females of child-bearing age or younger must provide details of the intended Recipient's RhD status.

- A small number of donors and recipients are RhD negative (RhD-ve).

- Bone allografts are separated by RhD status, where possible grafts from RhD-ve donors are kept in stock.

- Australian Biotechnologies' Allograft Request Form contains a field where the proposed Recipient's RhD status should be indicated. If this field is not completed an RhD positive (RhD+ve) status will be applied to the impending Recipient.

- Where possible RhD-ve Recipients will be supplied with bone grafts manufactured from RhD-ve donors. Where this is not possible the requesting surgeon MUST be informed. When an Rh-ve allograft is not available RhD-ve bone allograft Recipients can be given Rh immune globulin at the time of transplantation.

- Bone allografts manufactured by Australian Biotechnologies are manufactured in a manner designed to deplete the haemopoietic marrow and red blood cells, however ultimately the decision to use RhD+ve allograft materials in RhD-ve Recipients ultimately rests with the requesting surgeon.

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15th September 2010

RHESUS FACTOR

australian biotechnologies

BACKGROUND:

It has been suggested that red cells present in bone allografts can stimulate the production of multiple antibodies to Rh antigens [1, 2].

Rhesus immunization in girls or women of child-bearing age may have serious consequences. Jensen's report[1] is of significant interest in that it reports a case history whereby a 13 year old girl developed rhesus (D) antibodies after bone allografting. Previous reports such as those published by Hill et al (Haemolytic disease of new-born due to anti-D antibodies in a Du-positive mother (published Vox Sang 1974;27(1):92-4 and Johnson et al (Rh immunisation caused by osseous allograft (letter). N Engl J Med 1985;312(2):121-2) concerned women of child-bearing age. As such the possibility of previous pregnancy or abortion couldn't be ruled out.

The girl reported by Jensen[1] had an aneurysmal bone cyst treated by curettage and packing with cancellous bone allograft; all bone graft used in her surgery was obtained from femoral head donors. Routine blood grouping performed as a result of hospitalization following an accident some 6 months later revealed the antibody screen test was positive. Specifities were reported as anti-D, anti-E, and anti-C, titers were reported as 1:64 with the indirect Coombes technique[1].

Correspondence received by Acta Orthopaedics in response to Jensen's report indicate that after his case study was published the Departments of Blood Transfusion and Orthopaedics at the St Radboud University Hospital in the Netherlands performed a retrospective study of all recipients of osseous allografts within their hospital[3].

Twenty-three out of twenty-seven RhD-ve patients received RhD+ve bone transplants, none of whom formed RhD antibodies as determined 12 months or later after transplantation[3]. The correspondence further agreed that all RhD-ve women of child-bearing age or younger should receive bone allografts from RhD-ve donors only.

Musclow et al do advise that when an Rh-ve allograft is not available Rh-ve bone allograft Recipients should receive Rh immune globulin at the time of transplantation[2].
Bone allografts manufactured by Australian Biotechnologies are manufactured in a manner designed to deplete the haemopoietic marrow and red blood cells, however ultimately the decision to use Rh+ve allograft materials in Rh-ve Recipients ultimately rests with the requesting surgeon.

References:

1. Jensen TT. Rhesus immunization after bone allografting. A case report. Acta Orthop. Scand. 58, 584, 1987
2. Musclow CE, Dietz G, Bell RS, Beaudry-Clouatre M. Alloimmunisation by blood group antigens from bone allografts. Immunohematology. 1992;8(4):102-4
3. Correspondence Rhesus Immunisation after bone allografting B.A. van Dijk Acta Orthop Scand 1988;59(4):482