Debunking spider bite myths

Necrotising arachnidism should be a diagnosis of last resort

THE ARTICLE BY Isbister and Gray (*page* 199),[1] documenting 130 confirmed cases of bites by white-tail spiders, will, we hope, become one of the last acts in a prolonged and sad medical fable in Australia, regrettably now exported beyond our shores.[2] In 1982, a paper on possible spider bite necrosis in Australia was presented at the International Society on Toxinology World Congress in Brisbane,[3] and followed by an editorial in the *MJA* in 1983.[4] In 1987, Spring reported a case of severe skin damage following a presumed spider bite;[5] the article and the associated editorial[6] mentioned the white-tail spider. Speculation about the causative spider continued, with two "likely" candidates charged with the crime by the non-medical media,[7] supported by a few in the medical community. These spiders were the wolf spider and the white-tail spider. The former was suspected partly because of evidence from Brazil, subsequently debunked, implicating these spiders in causing skin necrosis. The actual cause in Brazil has since been shown to be recluse spiders (loxoscelism).[8] However, it was the white-tail spider, *Lampona cylindrata*, that was the principal focus of attention. Within a short time, at least a few doctors were diagnosing necrotising arachnidism caused by these spiders, and within about five years the popular association of these spiders with skin necrosis was well established. The lack of strong evidence to support this association seemed to be a triviality to be ignored. Research projects were proposed and funded to examine white-tail spider venom to understand its necrotic potential. Calls were made for governments to fund development of an antivenom. General practitioners regularly and confidently diagnosed skin lesions as "white-tail spider bite".

A few voices called "foul". Where was the evidence to support the veracity of this new venomous scourge of urban Australia? Some confirmed bites by white-tail spiders were published, with no evidence of skin damage.[9] Early research on the venom found no necrotic activity.[10] The spider is native to Australia, yet most people ignored questions about the absence of cases of necrotising arachnidism in the 200 years before Spring's article. Arachnologists questioning the validity of white-tail spider bite necrosis were also dismissed. In both the general and the medical community, the era of "white-tail spider bite necrosis" had arrived.

But the evidence cast ever stronger doubt about the veracity of white-tail spider bite necrosis, despite occasional published "cases". What was needed was a large number of cases of confirmed white-tail spider bite to clearly show the true range of its effects. Isbister and Gray's article defines a clear and consistent pattern of clinical effects, based on a large series, with no evidence of necrosis. As the authors point out, the inappropriate diagnosis of spider bite in cases of skin damage is not isolated to Australia or the white-tail spider, but our episode is particularly disturbing, because there was never any strong evidence to link this spider with necrosis. Publication of Isbister and Gray's article should herald the demise of the spurious diagnosis of white-tail spider bite necrosis. This will, we hope, bring an end to conditions such as basal cell carcinoma being misdiagnosed as spider bite, and to cases of feigned white-tail spider bite necrosis (where the patient inflicts skin damage with chemicals, then claims a spider bite).

This does not mean spider bite never causes necrosis. Recluse spiders have clearly been shown to cause necrosis in some parts of the world, including two cases in Australia,[11] where the spiders have been introduced. However, there is no evidence recluse spiders are widespread in Australia, and it would be erroneous to now label skin damage of uncertain origin as "loxoscelism" instead of "white-tail spider bite". When presented with skin damage of initially uncertain origin, medical practitioners must look for all the many and varied non-spider-bite causes for such damage, leaving necrotising arachnidism as a diagnosis of last resort and uncertain validity after all other possibilities are excluded. Any future research into necrotising arachnidism in Australia should focus on accurately determining the cause.

Julian White

Associate Professor, and Head of Toxinology
Women's and Children's Hospital, North Adelaide, SA

1. Isbister GK, Gray MR. White-tail spider bite: a prospective study of 130 definite bites by *Lampona* species. *Med J Aust* 2003; 179: 199-202.
2. St George I. Skin necrosis after white tailed spider bite? *N Z Med J* 1991; 104: 207-208.
3. Sutherland SK. Necrotising arachnidism: a possible new Australian syndrome [abstract]. *Toxicon* 1982; 20(Suppl 1): 59.
4. Sutherland SK. Spider bites in Australia: there are still some mysteries. *Med J Aust* 1983; 2: 597.
5. Spring WJ. A probable case of necrotizing arachnidism. *Med J Aust* 1987; 147: 605-607.
6. Sutherland SK. Watch out, Miss Muffet [editorial]. *Med J Aust* 1987; 147: 531.
7. Underhill D. Australia's dangerous creatures. Sydney: Readers Digest, 1987; 176-179.
8. Ribeiro LA, Jorge MT, Piesco RV, Nishioka SdeA. Wolf spider bites in Sao Paulo, Brazil: a clinical and epidemiological study of 515 cases. *Toxicon* 1990; 28: 715-717.
9. White J, Hirst D, Hender E. 36 cases of bites by spiders, including the white tailed spider, *Lampona cylindrata*. *Med J Aust* 1989; 150: 401-403.
10. Atkinson RK, Wright LG. Studies of the necrotic actions of the venoms of several Australian spiders. *Comp Biochem Physiol* 1991; 98: 441-444.
11. White J, Williamson J, Rieger N, et al. Necrotic arachnidism and its management: possible role for hyperbaric oxygen therapy [abstract]. *Toxicon* 1996; 34: 170. ❑

Human gene patents: under whose control?

Balancing commercial patent rights and public interest is a complex matter

IN THIS ISSUE of the Journal, Walpole and his colleagues (*page 203*) squarely raise the difficult issue of balancing public access to genetic health services with enforcement of gene patents.[1] They explore this issue using the case study of the hereditary breast cancer gene patents (the *BRCA* patents).[1] This timely and important article coincides with the work of the Australian Law Reform Commission (ALRC). On 5 June 2003, the ALRC released the final report of its joint inquiry with the Australian Health Ethics Committee on the protection of human genetic information.[2] The report proposes that access to genetic testing for healthcare should be better regulated, and emphasises the need for ongoing development of ethical standards, particularly in relation to consent and counselling (Recommendations 11-1 to 11-4).

The ALRC has now turned its attention to the separate, but related, issue of gene patenting and human health.[3] The ALRC will soon be releasing its Issues Paper and calling for submissions. It is likely that limitations on the use of disease gene patents will feature prominently in the submissions and in the ALRC's responses. The ALRC is required to report its findings by 30 June 2004.

The issues associated with gene patents and genetic services are complex and warrant detailed consideration. The role of patents is to encourage innovation, but this needs to be balanced against other values, including equitable access to healthcare. The ALRC may decide that the balance needs to be adjusted. However, a simple prohibition on gene patents is unlikely, of itself, to achieve this end. More comprehensive reform options may need to be considered, including changes to the requirements for obtaining a patent and restrictions on how patents are used. One option might be to include a requirement that the usefulness of the invention be fully examined. At present, the applicant only needs to show that the invention has some commercial value. It may be appropriate to follow the United States' lead of requiring the applicant to prove "specific, substantial and credible utility", and restricting the scope of the patent to proven uses.[4]

Even if patent law is reformed, it will not necessarily assist in dealing with gene patents that are already in existence. As patents have a 20-year life, the effect of the *BRCA* patents and others could be felt for many years, unless their validity is challenged in the Federal Court. In Europe, L'Institut Curie started proceedings in October 2001, challenging the validity of the *BRCA* patents.[5] Since then, other individuals and organisations across Europe have joined in, including research institutes, hospitals, ministries of health, and human genetics societies. They raise a number of grounds for invalidity, including that the invention is neither new nor inventive. Genetic service providers in Australia could challenge the equivalent Australian patents. However, the costs and risks of such litigation are such that this course of action should not be embarked upon lightly.

It is equally important to consider limitations to the ways in which patents may be used. The *Patents Act 1990* (Cwlth) grants patent holders the exclusive right to make, hire and sell the invention for the life of the patent. There are few controls on how this right may be used, but the controls that do exist warrant consideration. Sections 133 and 135 of the legislation allow applications to be made for compulsory licences when "the reasonable requirements of the public" have not been met. Although subject to certain limitations, a compulsory licence protects a person from infringement action for using a patented invention without the patent holder's permission. Perhaps surprisingly, there have been few compulsory licensing applications to date.