

History of the Banff classification of allograft pathology as it approaches its 20th year

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Purpose of review

To revisit the history and main defining characteristics of the Banff classification.

Recent findings

From small beginnings in 1991 the Banff classification of renal allograft pathology has grown to be the major standard setting force in renal transplant pathology and in international clinical trials of new antirejection agents. The meeting and classification has unique history, consensus generation mechanisms, funding, and tradition, and looks poised to continue for at least another 20 years. The Banff meetings also deal with setting standards for most other areas of solid organ transplantation and increasingly incorporate training courses and working groups so the activity never stops.

Summary

The Banff meeting has gone from being just another meeting to becoming the embodiment of the global standard, The Banff Classification, by which we determine the presence of rejection and other important disease conditions in the transplanted organ. It is crucial for patient care and crucial for clinical trials of new therapies that it remains updated and modern, an important dynamic yardstick against which we measure clinical success.

Keywords

central slide review, clinical trials, consensus generation, history of transplantation, training, transplantation pathology

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Introduction

In December 1990 I received a letter from Paul Keown telling me that the ISHLT had just published a consensus classification of heart and lung transplant biopsy interpretation and suggesting that we do the same for the kidney. I was enthusiastic from the beginning and so was Lorraine Racusen who said it was the most interesting project I had ever suggested to her. We decided to undertake it together and I began to look around for a location for the meeting.

On Easter Sunday in April 1999 I happened to be in Banff and on a whim I stopped by the Banff Centre for Conferences. The office was open despite the holiday because they were running a conference that day and so we began planning the meeting there for the first week of August.

The first meeting was very small. Actually it was interdigitated with an ISN Disaster Relief Task Force meeting which I conducted the same weekend. The people involved in the transplant pathology meeting included Paul Keown, Bryan Myers, Lennie Ramos, Pekka Hayry, Eva von Willebrand, Steen Olsen, Byron Croker, Phil

Halloran, Margaret Billingham, Doug Wilson, Lorraine Racusen, and me. You can see a video here: <http://cybernephrology.ualberta.ca/Banff/history.htm>.

The main genesis of the idea of the new classification came from the joint observations Steen Olsen and I had made on protocol biopsies. At Steen's hospital protocol biopsies were carried out in every transplant before discharge from the hospital and then often later in the transplant course. The protocol biopsy studies from Aarhus played an important role in our thinking about thresholds for rejection, especially with regard to tubulitis.

The protocol biopsy study which James Burdick and I conducted at Johns Hopkins began in January 1983 and continued until I moved to Canada in 1987.

Two articles from 1984 [1] and 1989 [2] describe these protocol biopsy studies that were an important background and the main motivation for the creation of the Banff schema in 1991.

It was clear to us that interstitial inflammation by itself was completely nonspecific and did not constitute

rejection unless accompanied by substantial tubulitis beyond a certain threshold or by arteritis. This message of the nonspecificity of interstitial infiltrate alone was considered so important in the description of the new classification that the editor of KI insisted that we emphasize this very early in the manuscript ('so it will be seen and understood even by the reader who never gets beyond the first page'). The published paper in 1993 reflected this suggested structure.

One can follow the progress of the meeting through its publications [3–11,12*] (<http://cybernephrology.ualberta.ca/Banff/2009/publications.htm>). There was a significant flaw in the original 1993 study [11]: it regarded tubulitis in atrophic tubules as having the same significance as tubulitis in nonatrophic tubules. By 1995 it became common practice to score tubulitis only in nonatrophic tubules and this requirement became part of the Banff 1997 classification published in 1999.

The 1995 meeting focused on making the Banff lesion scoring the same as CADI so there was no difference between the two assessments. The 1997 meeting modified the classification so that the concepts of the Banff and the NIH CCTT classifications were aligned and the two were merged in the 1997 Banff Working Classification.

More recently the classification has incorporated antibody-mediated rejection and has begun to address genomics, telepathology, maintenance of competence and training courses, and many other subjects. The Banff conferences have attracted an increasingly wide assortment of stakeholders to the meeting including pathologists, clinicians, surgeons, basic scientists, and representatives of other important organizations in transplantation like the ISHLT and the Immune Tolerance Network, regulatory agencies and government bodies, and pharmaceutical companies.

Constant vigilance has been necessary over these past 20 years to maintain the scientific rigor the meeting required. Often that rigor came mainly from the program we put together for the meeting, the selections of speakers and the goals and objectives for the meeting, the ideas about what each meeting should try to accomplish and who should lead various aspects of the process. Lorraine Racusen was the prime mover in these aspects of the meeting many years emphasizing cutting edge topics in transplantation. In addition to formal seminar-style sessions and facilitated discussions, poster sessions have provided an excellent format for data presentation and networking for both junior and senior investigators.

Other solid organs beyond the kidney have always been there at the Banff meetings. Margaret Billingham represented the heart in the first meeting in 1991, but

the other organs have become increasingly active in recent years creating their own Banff classifications of their respective areas, or moving the science of transplantation along by improving existing classifications.

There are now Banff classifications of liver, pancreas and composite tissue allograft pathology. We are most grateful to those who have led these nonrenal areas of the meeting, Jake Demetris in liver, Cynthia Drachenberg in pancreas, Rene Rodriguez in heart, and Linda Cendales in composite tissue.

The Banff consensus process

In 1991 I had 3 years of experience in leading the consensus process that a year later resulted in the Final Report of the Future of Pathology and Laboratory Medicine in Canada Consortium, so consensus generation in the allograft pathology meetings was conducted in a similar fashion.

There was no professional facilitator. In the beginning I did most of the facilitation. In later years Lorraine Racusen, Bob Colvin, and sessions chairs have also played an important role in facilitation.

The other solid organs – liver, pancreas, composite tissue, heart, and lung – have tended to follow the structure of the kidney consensus process in their own deliberations at the meeting.

The author line in the manuscripts reflected the actual work of creating them, with the individuals who facilitated and structured discussions at the meeting and who actually wrote the paper being included first, and the other authors being listed alphabetically after that. In recent years we have had a rotating cadre of young people as first authors.

Authorship included everyone who provided substantive and useful input, even those who were not at the meeting. From the beginning we have favored participation by young people, and those from developing countries. There has been a successful effort from the start to make the classification truly international.

An amusing aside is that in the beginning most feedback on the papers was provided by fax and in the years 1991–1993 I spent about \$15 000 a year on fax charges. With the advent of E-Mail this cost dropped to essentially zero by 1994.

Funding for the Banff meetings

Funding for the Banff meetings has been unusual in a very positive way from the very beginning: those

involved in organizing the meeting donate their time and are supported from elsewhere so there are essentially no administrative costs. Also from the beginning many speakers paid their own way to the meeting or found their own support.

Michele Hales who coordinated the Banff meetings from 1991 to 2007 had a University of Alberta position supported by the National Kidney Foundation (US) as Assistant Director of NKF cyberNephrology, a joint project of the University and the NKF.

Victoria Sheldon who has coordinated the Banff meetings since 2007 is a full time University undergraduate student and a part time employee of Transpath Inc.

Corporate donations to the Banff meetings are made payable to the University of Alberta and kept in a University account with all the usual oversights required by University procedures. Copies of past budgets are available on request. I (Kim Solez) am the contact for corporate donations, assisted by Dr Michael Mengel and Victoria Sheldon. Corporate donors are acknowledged on the website for the meeting, in the printed program, and in the publications from the Banff meetings.

As noted, most speakers cover their own costs. This arrangement has worked well for 20 years and allows us to put on a consistently excellent, unique standard-setting meeting while keeping costs to a minimum.

We are particularly enthusiastic about providing financial assistance to young participants and those from countries that have not been represented in the past in the process.

Conclusion: thanks to everyone!

Finally I would like to thank everyone involved for the financial assistance we have received from individuals, corporations and granting agencies over the past 20 years. We could not have done it without you!

The intellectual ferment of Banff is even more important, and for this I thank all of you who have contributed your

time and ideas over the years to help us make important new decisions and move science and medical practice forward.

The next 20 years will be even more exciting than the past 20 have been, as our activities expand still further. Thanks to everyone for participating and contributing!

References and recommended reading

Papers of particular interest, published within the annual period of review, have been highlighted as:

- of special interest
- of outstanding interest

Additional references related to this topic can also be found in the Current World Literature section in this issue (p. 131).

- 1 Burdick JF, Beschoner WE, Smith WJ, *et al.* Characteristics of early routine renal allograft biopsies. *Transplantation* 1984; 38:679–684.
- 2 Olsen S, Burdick JF, Keown PA, *et al.* Primary acute renal failure ('acute tubular necrosis') in the transplanted kidney: morphology and pathogenesis. *Medicine (Baltimore)* 1989; 68:173–187.
- 3 Solez K, Colvin RB, Racusen LC, *et al.* Banff 07 classification of renal allograft pathology: updates and future directions. *Am J Transplant* 2008; 8:753–760.
- 4 Cendales LC, Kanitakis L, Schneeberger S, *et al.* The Banff 2007 working classification of skin-containing composite tissue allograft pathology. *Am J Transplant* 2008; 8:1396–1400.
- 5 Drachenberg CB, Odorico J, Demetris AJ, *et al.* Banff schema for grading pancreas allograft rejection: working proposal by a multi-disciplinary international consensus panel. *Am J Transplant* 2008; 8:1237–1249; *Epub* 2008 Apr 29.
- 6 Solez K, Colvin RB, Racusen LC, *et al.* Banff '05 Meeting Report: differential diagnosis of chronic allograft injury and elimination of chronic allograft nephropathy ('CAN'). *Am J Transplant* 2007; 7:518–526.
- 7 Racusen LC, Halloran PF, Solez K. Banff 2003 meeting report: new diagnostic insights and standards. *Am J Transplant* 2004; 4:1562–1566.
- 8 Racusen LC, Colvin RB, Solez K, *et al.* Antibody-mediated rejection criteria: an addition to the Banff 97 classification of renal allograft rejection. *Am J Transplant* 2003; 3:708–714.
- 9 Racusen LC, Solez K, Colvin RB, *et al.* The Banff 97 working classification of renal allograft pathology. *Kidney Int* 1999; 55:713–723.
- 10 Solez K, Benediktsson H, Cavallo T, *et al.* Report of the Third Banff Conference on Allograft Pathology (July 20–24, 1995) on classification and lesion scoring in renal allograft pathology. *Transplant Proc* 1996; 28:441–444.
- 11 Solez K, Axelsen RA, Benediktsson H, *et al.* International standardization of criteria for the histologic diagnosis of renal allograft rejection: the Banff working classification of kidney transplant pathology. *Kidney Int* 1993; 44:411–422.
- 12 Sis B, Mengel M, Haas M, *et al.* Banff '09 Meeting Report: antibody mediated
 - graft deterioration and implementation of Banff working groups *Am J Transplant*. 2010 (in press).
 Establishes the new feature of the working groups to keep the work of the Banff consensus process going on in an organized way between the meetings every 2 years.