Australian Animal Pathology Standards Program

STANDARD OPERATING PROCEDURE

PROFICIENCY TESTING FOR HISTOPATHOLOGICAL INTERPRETATION

Drafting Group: B Richards, J Taylor, P Canfield, T Ross, J Mackie and R Kelly, with contributions from members of the Australian Society for Veterinary Pathology

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1. PURPOSE

This procedure is to provide guidance for those participating in the AAPSP rounds of proficiency testing for histopathological interpretation. While it is accepted that the method and format of routine day-to-day reporting will vary substantially between laboratories, to preserve equity the proficiency testing responses need to be evaluated against a defined standard. Hence, proficiency testing reports may not resemble those issued for routine diagnostic purposes, because a full description is required for assessment.

2. SCOPE

This procedure covers written description, diagnosis and diagnostic interpretation and comments on the pathological changes detected in stained tissue sections and in electronic images.

3. DEFINITIONS AND REFERENCES

3.1 Definitions

AAPSP: Australian Animal Pathology Standards Program
NATA: National Association of Testing Authorities

3.2 References

Chitwood M and Lichtenfels JR (1972) Identification of Parasitic Metazoa in Tissue Sections. *Experimental Parasitology* 32:407-519.

Gardiner CH (1995) Identification of Metazoan and Protozoan Parasites in Tissue Sections. www.afip.org/vetpath/POLA/POLA95/ The file is named 'gardiner'

Jubb, Kennedy & Palmer's Pathology of Domestic Animals, 5th Edition, 2007, Saunders Ltd., Ed M. Grant Maxie.

Meuten DJ (Editor) Tumors in Domestic Animals, 4th Edition (2002)

Veterinary Pathology, a journal published by the American College of Veterinary Pathologists

WHO Histopathological Classification of Tumors of Domestic Animals (www.afip.org/vetpath/who/whoclass.htm)

4. EQUIPMENT

Standard compound microscope.

Personal computer with minimum 512 MB RAM, DVD reader and capable of operating Aperio ImageScan software or equivalent.

5. RESPONSIBILITIES

Proficiency testing evaluations are based on the assessment of a single report from each of the participating laboratories. Laboratory Directors should ensure that all pathologists actively involved in histopathological diagnosis have input to the preparation of the report, which should represent the consensus view. As with all proficiency testing, the responses, assessment and laboratory review of each round of testing are a part of the laboratory records for auditing by NATA.

6. PROCESS

A document containing a short history will accompany each of the test cases, stating the species and usually giving an indication of the clinical syndrome involved. The report on each case should begin with identification of the tissue(s), a description of the histopathological changes identified, and be followed by a morphological diagnosis, an aetiology (if requested), aetiological diagnosis (if requested), disease name (if requested) and appropriate comments (if requested).

6.1 Histopathological Descriptions

A narrative description of histopathological changes using the present tense and whole sentences is preferred. Identification of the tissue together with (if appropriate) its anatomical location should be stated. Descriptions should be concise and include the salient pathological features observed at all magnifications. It is expected that sufficient description will be provided on architectural changes, vascular alterations, appearance of constituent cells, any infiltrating cells and pigments and deposits. Generally accepted pathological terminology should be employed, such as that found in reputable journals and text books (e.g. *Veterinary Pathology* and *Jubb & Kennedy's Pathology of Domestic Animals*).

When aetiologic agents are present in tissues, their description (where possible) should include sufficient morphological features to support a presumptive broad classification. For example, in the case of parasites (Chitwood & Lichtenfels 1972, Gardiner 1995) the reported features should enable classification to the level of taxonomic phyla if not to class (e.g. cestodes, nematodes, arachnids). For protozoa, morphological distinction can usually be made between ciliates, flagellates, amoeba and sporozoa (which may be further identified as apicomplexans, microsporidia or myxozoa). For fungi, descriptive features, if present, may enable identification to the level of taxonomic divisions (e.g. zygomycetes, ascomycetes). Bacteria should be described by their morphological features and Gram staining characteristics.

Recourse should be made to standard texts (e.g. 'Tumors in Domestic Animals' edited by DJ Meuten (2002), 'WHO Histopathological Classification

of Tumors of Domestic Animals') for classification of tumours and tumour-like lesions.

At completion, check reports for typographical, grammatical and spelling errors.

6.2 Morphological Diagnosis

In forming a morphological diagnosis the first consideration should be the pathological process (e.g. inflammation, degeneration, neoplasia, hypoplasia), together with adjectival descriptors of the process. The descriptors should cover the classification of the process (e.g. pyogranulomatous), duration (e.g. acute/subacute/chronic), distribution (e.g. focal/multifocal/focally extensive/diffuse) and severity (e.g. mild/moderate/severe). A qualifying statement may also be necessary (e.g. 'with intralesional coccoid bacteria'). Hence the suggested format for morphological diagnosis is:

Process / classification / duration / distribution / severity / qualifier

For example:

Dermatitis, pyogranulomatous, chronic, diffuse, severe, with intralesional coccoid bacteria

For tumours and malformations, a different set of descriptors will apply based on the appearance of the lesion. Refer to standard texts and journals for guidance.

6.3 Aetiology, Aetiological Diagnosis, Name of Disease

The defining aetiology, aetiological diagnosis and name of disease (or combinations) may be requested.

Examples:

Aetiology: *Mycobacterium avium* subspecies *paratuberculosis*

Aetiological Diagnosis: Mycobacterial enteritis

Name of Disease: Paratuberculosis (Johne's disease)

6.4 Comments

Cases selected will be of typical disease processes but where appropriate comment may be requested on:

- The diagnosis or presumptive diagnosis (indicating degree of confidence) and realistic differential diagnosis.
- Additional procedures to support or confirm the diagnosis (e.g. histochemistry, immunohistochemistry, immunofluorescence).
- Recommended specimen selections in the event that a similar case is subsequently encountered.

It is important to address only those comments requested.

Example:

Give an aetiological diagnosis

Presumptive generalised glycogenosis type II (Pompe's disease)

Comments:

What cells are typically affected?

Neurones and myocytes are affected.

Give a differential diagnosis.

The differential diagnosis includes other genetically transferred lysosomal storage diseases (e.g. mannosidosis) and toxic diseases (e.g. swainsonine (a phytotoxin)-induced mannosidosis).

What additional procedures may be used to support or confirm the diagnosis?

Special stains for glycogen (PAS with and without diastase) will distinguish glycogenosis from mannosidosis, and are recommended. Genetic testing is available for confirmation of Pompe's disease by the addition of plucked hair samples to the range of specimens submitted.

7. DOCUMENTS

Proficiency testing reports for each case should be prepared as word documents omitting laboratory identification, headers and formatting, and using the following headings:

AAPSP Histopathology Proficiency Test (Month/Year)
AAPSP Laboratory identifier
History (provided)
Histopathological Description
Morphological diagnosis (es)
Aetiology / Aetiological Diagnosis / Disease name (as requested)
Comments (as requested).