

CYTOLOGY

FLUID SAMPLES

Peritoneal fluid analysis is particularly useful as a diagnostic aid in cases of colic, weight loss and other suspected abdominal disease. It may be of particular value in helping to make the decision for surgical intervention. With the horse restrained in the standing position, a 19 gauge, 1.5 or 2.0 inch needle is carefully advanced through the skin at the lowest part of the abdomen and then through the linea alba. If fluid is not immediately forthcoming, the needle may be rotated or the tap may be repeated at other sites. Ultrasound echographic examination may be useful to locate a pool of peritoneal fluid for collection. A turbid and homogeneously blood-stained sample may indicate abdominal vascular embarrassment. A white, turbid fluid may suggest peritonitis. A brown, foul smelling fluid may indicate intestinal rupture or an intestinal tap. Total nucleated cell counts $>10 \times 10^9/l$ suggest the presence of a peritonitis or an intestinal or peritoneal lesion which may warrant surgical investigation. Cytological examinations may suggest acute or chronic infection, inflammation or neoplasia.

Pleural fluid analysis may help with the diagnosis of pleuritis. Ultrasound echographic examination is recommended to confirm the presence of pleural effusion prior to tap. A 7.5 cm blunt teat cannula is inserted, with a 35 ml syringe attached to prevent aspiration of air into the pleura, through a small skin incision, between the 6th or 7th intercostal space, 15 cm dorsal to the olecranon. Pleural fluid is collected by suction. Total nucleated cell counts $>10 \times 10^9/l$ suggest the presence of a pleuritis. Cytological examinations may reveal neoplasia, e.g. lymphosarcoma.

Synovial fluid analysis is useful in the diagnosis of arthritis and in particular, in 'joint-ill' in foals. Total nucleated cell counts $>0.5 \times 10^9/l$ suggest an inflammatory lesion. Septic arthritis usually produces cell counts $>10 \times 10^9/l$, with toxic cytopathological changes.

Tracheal washes or aspirations may be collected either via a suitable endoscope or by the trans-tracheal route, depending on equipment available and the importance of bacterial culture results. A long, fibre-optic endoscope is passed through the pharynx, larynx and into the trachea. A long polyethylene tube is passed down the instrument channel and accumulated secretions may be aspirated directly. Alternatively, 50 ml sterile saline may be injected quickly and then aspirated while withdrawing the tube. If a suitable endoscope is not available, the trans-tracheal aspiration technique may be used. A sterile polyethylene tube is passed down a trochar inserted surgically between two tracheal rings at the mid lower third of the cervical trachea and the sample is collected after flushing in 30-50ml sterile saline solution. This method is clearly more invasive and there is a risk of local wound complications, but there is less risk of contamination of the sample with pharyngeal commensal bacteria. Samples should be submitted in a sterile universal container (for cell count and bacteriology), and diluted 50:50 with cytopreservative solution for differential counting and cytology. Additionally, and particularly where there may be a delay in reaching the laboratory, a swab of the sample placed in Amies transport medium should be submitted.

Broncho-alveolar lavage (BAL) samples Cytological examinations of BAL samples may help in the characterisation of acute and chronic small airway inflammatory responses. Routine examination includes total cell count, differential cell count and cytological examination. Samples should be submitted in a sterile universal container (for cell count and bacteriology), and diluted 50:50 with cytopreservative solution for differential counting and cytology.

Cerebrospinal fluid (CSF) samples are most commonly collected from horses (and foals) showing neurological signs. Samples may be collected from the alanto-occipital space, or by lumbosacral tap. If you wish to discuss the collection technique, please telephone the laboratory. The sample should be submitted in a plain tube for cell count and biochemistry, and diluted 50:50 with cytopreservative solution (available on request) for cytology. Routine examination includes white cell count (counting chamber method due to low cell counts), total protein (microprotein method), creatine kinase, sodium, potassium and chloride, cytology. In horses that are from endemic areas that are suspected of protozoal myeloencephalitis, we can refer CSF samples to specialist laboratories for serological and DNA (PCR) testing.

Endometrial smears are simple and quick to perform and provide a much more accurate and direct test for the diagnosis of acute endometritis in mares, pre-coitus than swab examinations alone. When used in conjunction with endometrial swabs for bacteriological examinations, results are infinitely more meaningful and valuable. The presence of endometrial epithelial cells is used as a test of smear quality and the presence or absence of polymorphonuclear leucocytes is used as the diagnostic test for acute endometritis. Smears should only be taken during oestrus. We prefer an unguarded technique in which an extended sterile large tipped swab is passed through the cervix via a sterile speculum. The swab is rolled onto a gelatine-coated slide and fixed with 'cytofix' prior to transport to the laboratory for staining. Smear 'kits' (including slides and spray fixative) are available from the laboratory on request. A useful alternative is the 'Testsimplet' (Diagonal Ltd) which is a pre-stained slide. The swab is rolled onto the slide, left for three minutes at room temperature before washing off the background, drying and cover slipping for microscopic examination.

Semen samples should be collected into an artificial vagina to allow a full examination. We may be able to help with the collection of samples, if requested, on a referral basis. Please contact us for more details before sending samples. In addition to a full case history, we require details of methods of collection, the colour, consistency, volume and motility of the ejaculate. Please send an undiluted sample in a sterile container for density estimations and bacteriological examinations, and a sample diluted immediately 1:1 with formol citrate solution (available on request) for live:dead and morphology examinations.