VOORJAARSdagen
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PROGRAMME AND SCIENTIFIC PROCEEDINGS
The most important thing is to obtain two plain orthogonal radiographs of the region of main interest. This means medio-lateral and cranio-caudal views for the extremities or latero-lateral and dorso-ventral / ventro-dorsal views the head and spinal cord, respectively. Sometimes stressed or oblique views may be used in complex joints. Computed Tomography is valuable for further evaluation of questionable or suspicious radiographic findings. Three-dimensional reconstructions may give additional information.

In the following skeletal congenital malformations and diseases that may be diagnosed on radiographs and computed tomography will be explained, although this list is not exhaustive.

**Congenital disorders of the head:**
- brachycephalic breeds are often presented with a domed calvarium
- congenital hydrocephalus: domed shape of the calvarium, thinning of the bones, uniform groundglass opacification, prominent or open fontanelles and suture lines; mostly miniature and small breeds
- occipital dysplasia: dorsal extension of the foramen magnum, seen on rostrocaudal view; may be accompanied by hydrocephalus
- increased thickness of the calvarian bones may be present in e.g. Pit Bull terriers
- CMO (craniomandibular osteopathy): West Highland White Terriers, Cairn Terriers, Scottish Terriers; sometimes large breeds: (para)periosteal new bone on skull, mostly on mandibules and tympanic bullae; sometimes distal ulnar and radial metaphyses
- Kartagener’s syndrome or immotile cilia syndrome: causes increased opacity of the nasal cavity, sinus inversus and bronchitis or bronchiectasis; sinusitis may cause increased opacity of the frontal sinuses
- congenital anodontia (absence of teeth) or oligodontia (reduction in number of teeth); the latter is common in brachycephalic breeds; sometimes polyodontia; oblique intraoral views may demonstrate the teeth better than lateral and dorso-ventral views.

**Congenital disorders of the appendicular skeleton: shoulder:**
- rudimentary clavicules: also seen in dogs; are better seen on caudo-cranial views
- separate ossification centre of glenoid
- OCD (osteochondrosis dissecans): flattening of the caudal humeral head, male preponderance, often bilateral
- congenital shoulder (sub-)luxation: mainly miniature and toy breeds, humerus displaced mediolaterally: flattened, underdeveloped glenoid with progressive remodelling
- elbow, radius and ulna:
  - sesamoids: dogs (larger breeds) and cats; craniolateral to radial head, usually bilaterally, in supinator muscle, annular ligament, lateral collateral ligament (DDX: joint mice, chip fractures)
  - FCP (fractured coronoid process): Labrador Retrievers, Golden Retrievers, Bernese Mountain dogs, Rottweilers, Newfoundlands; male preponderance, often bilateral, on medial side
  - OCD: medial distal humeral condyle, elbow dysplasia complex
  - UAP (ununited anconeal process): elbow dysplasia complex: German Shepherd dogs, Irish Wolfhounds, Great Danes, Gordon Setters, Basset Hounds, predisposed by elbow incongruity with short ulna and long radius putting pressure on anconeus; usually separate centre fuses to ulna with 4-5 months; chronic cases show severe remodelling of the fragment and osteoarthrosis; flexed ML view;
  - Distractio cubiti: Basset Hounds, chondrodystrophic breeds; asymmetric growth of radius and ulna causes incongruity of joint spaces
  - congenital elbow (sub)luxation: often lateral displacement of radial head, radius elongated, radial head rounded and remodelled.

  **pelvis:**
  - hip dysplasia: developmental and partly inherited condition, usually in larger breeds (often German Shepherd dogs, Labrador Retrievers); typical radiographic changes: shallow acetabulum, deformation and subluxation of femoral head, flattening of the cranial acetabular edge.
• CLP (Calvé - Legg - Perthe’s disease): avascular necrosis of the femoral head in young or adolescent small breed dogs, often bilateral; maybe autosomal recessive inheritance in e.g. West Highland White terriers; typical radiographic signs: uneven femoral head shape and opacity, irregular joint space
• OCD: very rare, sometimes in Border Collies, Pekineses

stifle:
• bipartite or multipartite fabellae or patella
• OCD: lateral femoral condyle, medial femoral condyle or lateral trochlear ridge
• medial patellar luxation: genetic predisposition possible in Devon Rex cats; dogs: mostly toy breeds, also Flatcoated retrievers, Fox and Jack Russell Terriers.

hock and phalanges:
• OCD: usually in Labradors, Rottweilers, English and Staffordshire Bull terriers; mostly flattening of the medial trochlear ridge of the talus (most common site) or lateral trochlear ridge of the talus (Rottweilers possibly predisposed); sometimes small bone fragments are visible.
• polydactyly
• additional tarsal bones or malformation of the tarsal bone: mainly Rottweilers and other large breeds, also dogs with polydactyly

Congenital disorders of the spine:
• supernumeral lumbar or sacral vertebrae; may aggravate cauda equina compression syndrome or hip dysplasia due to malformation
• lack of 13th thoracic vertebra and lack of ribs
• transitional vertebrae: sacralisation of the last lumbar vertebra: transverse process fuses with the sacral wing and/or articulate with the ilium - may aggravate cauda equina compression syndrome or hip dysplasia; in German Shepherd dogs, Dobermans, Great Danes, St. Bernards, Labrador Retrievers, Brittany Spaniels, Rhodesian Ridgebacks; lumbarisation of 5; transitional vertebra in every other region possible
• hemivertebra: mostly in thoracic and tail regions; usually no clinical signs; may cause scoliosis, lordosis or kyphosis; Bull terriers predisposed
• block or fused vertebrae, mostly in lumbar and cervical region
• butterfly vertebra: particularly in brachycephalic dogs like bulldogs, Pugs, Boston Terriers; a cleft is visible in the cranial and caudal end plate, better seen on VD view in the caudal thoracic and lumbar region
• incomplete fusion of the sacrum
• cervical vertebral malformation malarticulation syndrome, Wobbler syndrome: malformation and upward tilting of a vertebral body, often C4-C7; mostly Dobermans
• occipito-atlanto-axial malformation, instability or subluxation, odongoid peg agenesis or hypoplasia
• spina bifida: in lumbar region, Bulldogs or other brachycephalic dogs, Manx cats
• sacrococcygeal dysgenesis: Manx cats

Although a lot of spinal disorders look very dramatic on radiographs they may cause hardly any clinical signs.

General skeletal congenital disorders:
• chondrodystrophic breeds: bowing of bones, prominent apophyses
• congential hypothyroidism: disproportinate dwarfism, epiphyseal dysgenesis, delayed vertebral endplate fusion, bowing of long bones, mainly radius and ulna; Boxers predisposed
• pituitary dwarfism: proportionate dwarfism; German Shepherd dogs
• osteochondrodysplasias, hereditary dwarfism: delayed growth mainly of the distal ulnar growth plate leading to shortening and bowing of the forearm
• mucopolysaccharidases type VI and VII in cats: lysosomal storage disease: enzymes that are needed for degradation of mucopolysaccharides are stored, which causes progressive organ and tissue dysfunction; inherited epiphyseal dysplasia, dwarfism, mainly spinal changes similar to hypervitaminosis A; also thin cortices of long bones, pectus excavatum, acetalobar flattening, may also cause hip dysplasia and facial dysmorphia with aplasia of the frontal sinuses; manifests later in life; especially seen in cats with Siamese ancestry
• renal congenital dysplasia may cause renal secondary hyperparathyroidism, which causes demineralisation
• CLAD (canine leucocyte adhesion disorder): autosomal recessive, Irish Red Setters, osteolytic or mixed osteolytic-proliferative lesions in metaphyses (distal radius and ulna) and skull, similar to CMO and metaphyseal osteopathy; also thickening of the frontal bones
• SLE (systemic lupus erythematosus), hereditary in German Shepherds, also collies, Afghans, sheepdogs, Beagles, Irish Setters, poodles, Siameses, Himalayan cats: causes soft tissue swelling, joint effusion, nonerosive arthritis
• Osteochondroma (single), Multiple Cartilaginous Exostoses (MCE): benign, proliferative disease in young dogs, rarely cats; during enchondral bone formation of any bone (but not skull) growing of radiopaque inhomogenous “masses”; compressive neurologic disease possible.
• osteopetrosis, chalk bones: very rare, massive increase in bone opacity, may cause non-regenerative anaemia, autosomal recessive inheritance, usually lethal
Further Reading:


