

Rounds

Animal Health
Department

Medical Rounds

"medicine for all"



Caring for Stranded Marine Animals

NATIONAL
MARINE
L I F E
CENTER

Notes

Veterinary Research
Department

Under the microscope

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Rounds Notes is a report on the health of animals at the National Marine Life Center from Sea Rogers Williams VMD for the staff, volunteers, and community of the center including professionals involved the captive care of similar species, the views expressed are not necessarily that of NMLC. Information in Rounds Notes should be considered confidential and used solely to benefit the health of aquatic animals everywhere.

May 23, 2013

Rounds Notes

15:49-52 (2013)

HeadHeadlines News: Townsend

post-op

wt = 35.5 kg; TPR = 98.9, 120, 40-60

Visual inspection again this week, doing better each day, almost healed, behavior is improved and staff reports Townsend is definitely not deaf. We are waiting for the skin to heal post-op, a depth recording tag, a final CT and BEAR hearing test.



Clinical Update: Howland

failure to thrive

wt= 21.9 kg , TPR= 99.4, 160, 40 B/S 2.5/5

last blood: 5-21-13

last rads: ABD 5/7/13

Possible toxic neutrophils were seen in the last CBC along with an increased WBC (19,500), so we held Howland back, today I looked at a smear and found no toxic changes and an estimated WBC of 14,000, if the lab agrees, quarantine is over.



UNDER the Microscope:

Harbor porpoise lungs, love 'em

Take a look at the digital image of the larvae of, *Halocercus invaginatus*. You got to love the verminous pneumonia of the Harbor porpoise for the range of severity and sheer number of parasites that also love Harbor porpoise lungs, I can count at least five : *H. invaginatus*, *H. ponticus (syn)*, *S. minor*, *T. convolutus*, and *P. inflexus*, and these infections are not mutually exclusive and mixed verminous pneumonia is the rule. I have recently added another diagnostic chart to aid in the identification of these parasites so we can sort these out.



Sea Turtles: Topsy 20**elevated tissue enzymes**

CC: plastron abrasion, oral spots
Meds: d/c

Last Blood: 3-26-13; LDH, resolving

Last Rads: 3-26-13 WNL

wt=4.0 kg, SCL=27.5, SCW=26.3, HR=48, BAR, B/S=3/5

Wounds have healed up, gaining weight and looking good, minor pin point areas in back of oral cavity and mild abrasion on caudal plastron. Left hind flipper scar from tag.

**Sea Turtles: Gerald 21****elevated tissue enzymes**

CC: flipper tip lesions, resolved

Last Blood: 3-26-13, glu and UA resolved, increase CK, LDH and PCV

Last Rads: 3/26/13 WNL

wt= 6.7 kg, SCL=33.8, SCW=31.2, HR=60, BAR, BS= 3/5

Wounds resolved, PE WNL

**Sea Turtles: Betsy 22****elevated tissue enzymes**

CC: resolving rash and circular neck mark, flipper tip lesions
MEDS: d/c

Last Blood: 5-8-13; LDH still elevated, improvement

Last Rads: 5-21-13, repeat flipper tips, other WNL

wt= 6.0 kg, SCL=31.3, SCW=29.2, HR=48, BAR, BS= 3/5

circular neck mark unchanged, rash is resolved other PE WNL. Recommend continued rehab. Recheck blood in early June, if rate of improvement continues, should be ready to go.

**Sea Turtles: Ernest 26****rash resolving, minor flipper tips**

CC: resolving flipper tip lesions

Last Blood: 3-26-12; spike in LDH UA resolved, eosinophilia

Last Rads: 5-21-13, phlange autolysis 2-5-13

wt=4.0 kg, SCL=27.7, SCW=26.1, HR=40, BAR, BS = 3/5

Possible bite to right elbow, mild plastron abrasion, flipper tips still not 100% but appear inactive, rads today



Sea Rogers Williams VMD
attending veterinarian and director of science



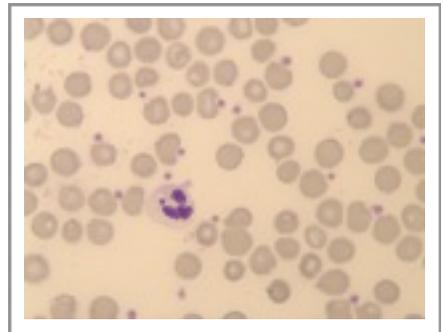
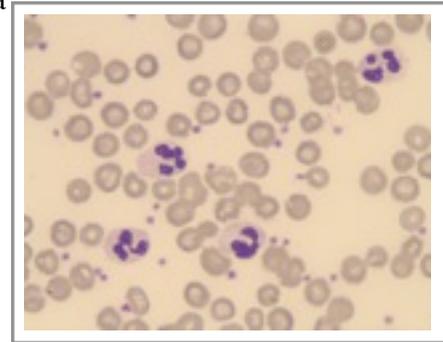
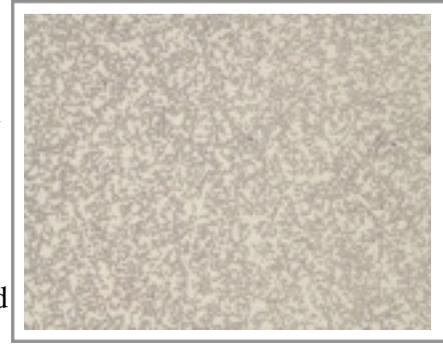
Up on a Soapbox:

the complete blood count

When an animal is sick or needs to be evaluated, we in the medical profession will often collect the minimum clinical data needed to assess a patient, this includes a signalment, history with date of last normal and chief complaint, and a physical evaluation with a measurement of vital signs: temperature, pulse, respiration, and recently I'd consider blood pressure, oxygen saturation an extension of this in critical patients. It is common to add on some very basic laboratory data called a minimum data base which includes, a CBC, liver enzyme, renal value (BUN or creatine), glucose, and perhaps a urine specific gravity.

Today let's tackle the complete blood count or CBC. Often these are shipped out to a large reference lab like IDEXX and run through sophisticated laser cell counters or similar technology, but these machines were originally designed for human cells, and calibrated for cats, dogs, and other domestic species, so their application in exotic and wild animals is often unvalidated. So what's the conscientious clinician to do? First thing is to examine a cytology slide of the peripheral blood, not as replacement for the CBC but to monitor quality control, and get an early and quick clinical assessment of myriad of clinical data that flow from this important test. Attached is our SOP for this purpose. My sincere thanks to Dr. Virginia Sinnott DVM DACVECC from Cape Cod Veterinary Specialists for inspiring me to apply her "How I Use Blood Films in the ER" presentation to our seals. I believe that every CBC from an exotic species or critical animal will benefit from the steps she out-lined for the 4 point evaluation of a blood film stained in DifQuick®, which corresponds the the four magnifications we use to examine the slide (4x, 10x, 40x -high dry, and 100x -oil immersion). Even if a full differential is not preformed, a sense of the RBC morphology and WBC maturation level along with a rough index of the systemic inflammatory processes and immune response will be better appreciated, and achieved more quickly by this process. It also offers a greater sense of connectedness to the CBC results when they do arrive (often the next morning) and we would have had a chance to jump on severe anemia, dehydration, IMHA, a left shift, and over-whelming infection or leukemia.

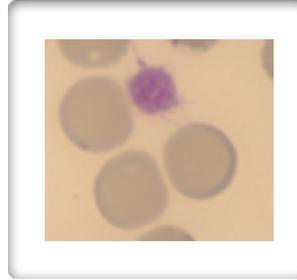
So get off that soap box and take a look under the scope, it is time well spent.



Phocid peripheral blood cytology & CBC



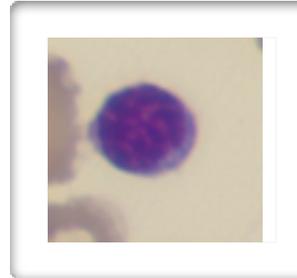
4x: Quality control:
evaluate staining characteristics
Find the monolayer of cells
check for large clumps of platelets
check for clumps of white blood cells (WBCs)
microfilaria ?



RBCs and platelets
note changes in RBCs particularly microcytosis, polychromasia, and damaged cells



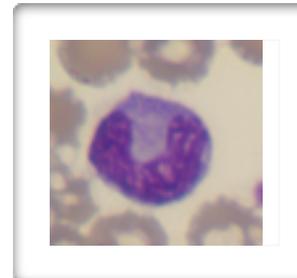
10x:
most important step
check for small clumps of platelets
qualitative WBC evaluation (the chocolate chip analogy)
too few, too many WBCs



Lymphocytes
Many cell populations exist, very scant cytoplasm, small compact nucleus often with a notch.



40x :
quantitate WBC estimate = 2,000 x (ave # WBCs per 40 x field of view, n=10)
evaluate RBC morphology
evaluate WBC morphology
differential count (advanced)



Monocytes
Check for the presence of vacuoles, generous cytoplasm, "U" shaped nucleus



100x:
evaluate RBC and WBC morphology
quantitate platelet estimate = 15,000 x (ave # platelets per 100 x field of view, n=10)
differential count (beginner)



Neutrophils
toxic changes = basophilic cytoplasm, foamy cytoplasm, & Dohle bodies
Note the % of immature and "band" or "stab" cells

Report:

PCV (%) and TS (g/dl), then est. WBC (from 40x)
Count 100 white blood cells (Differential)
WBC differential counts (% and totals) comment on platelets, and cell morphology WBC & RBC.



Eosinophils
Often with bi-lobed nucleus
distinct pink granules
seen with parasitic and allergic diseases



Basophils
rare WBC with intense large basophilic granules, function in seals is unknown