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# Endocrine Emergencies

drip 4

version 1

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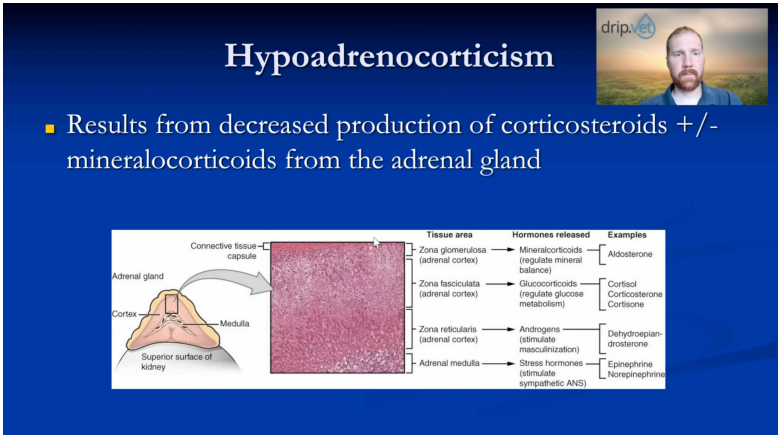
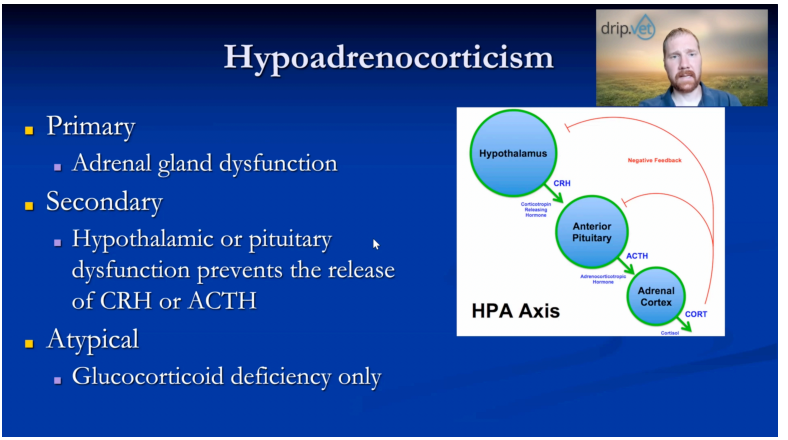


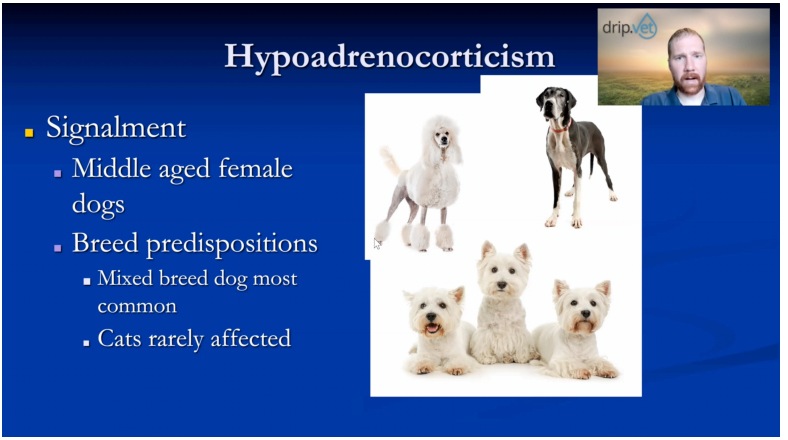

Moving on to another organ here, hypoadrenocorticism, which, of course, colloquially is known as Addison's disease. So this is going to result from decreased production of corticosteroids and/or mineralocorticoids from the adrenal gland. So the adrenal gland has these zones in that it produces different molecules like aldosterone, cortisol, epinephrine. And if there is a dysfunction with one or more of those zones, then they may not be adequately producing corticosteroids or mineralocorticoids.




There's a couple of different types of hypoadrenocorticism. There's primary and then secondary. And then there's this atypical. So primary is where there's actually a problem with the adrenal gland itself. So the adrenal gland is getting the signals that it's supposed to from the anterior pituitary, but it is not actually then producing the appropriate aldosterone or cortisol.

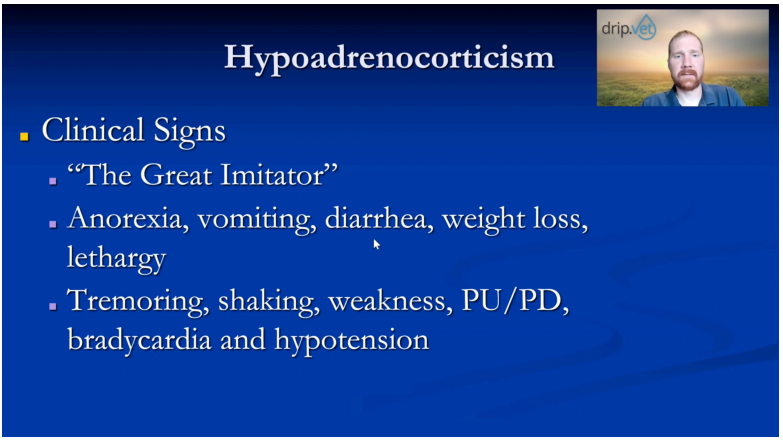
Then there's also secondary, so either hypothalamic or pituitary dysfunction. Sometimes people call-- if there's a problem with the hypothalamus producing the CRH, sometimes we'll call that tertiary hypoadrenocorticism because it's another step back. But I guess it's still kind of secondary. So either hypothalamic or pituitary dysfunction prevents the release of those hormones. So then it just can't cascade down there and then get that signal to the andrenocortex.

And then atypical is where you actually have a glucocorticoid deficiency only, so you don't have this mineralocorticoid deficiency. So those animals tend not to be quite as sick. They don't typically tend to come in with cardiovascular collapse, which is caused by the mineralocorticoid deficiency. But they may have clinical signs, like chronic GI signs or something. And you still may be able to diagnose them with a glucocorticoid atypical Addison's disease.

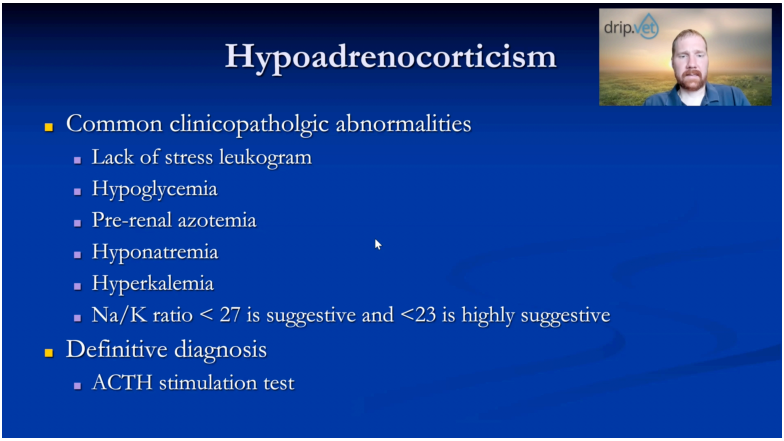



These are some of your poster children for hyperadrenocorticism, so West Highland white terriers, great Danes, standard poodles, Wheaten terriers, Rottweilers, and then Portuguese water dogs are on that list as well, although I don't think you see quite as many of those as probably those other breeds.

Middle-aged dogs primarily. There is a predisposition for females, but of course it can happen in males as well. And then cats are rarely affected.




This is often called the Great Imitator because it can really cause a variety of different clinical signs. And a lot of the clinical signs are just sort of generic clinical signs. So things like anorexia, vomiting, or diarrhea, weight loss, lethargy. Again, 100 or probably more things can lead to those clinical signs. And then of course, other things like PU/PD, weakness. And then, if they're really in an Addisonian crisis, then bradycardia and hypotension may occur as well.

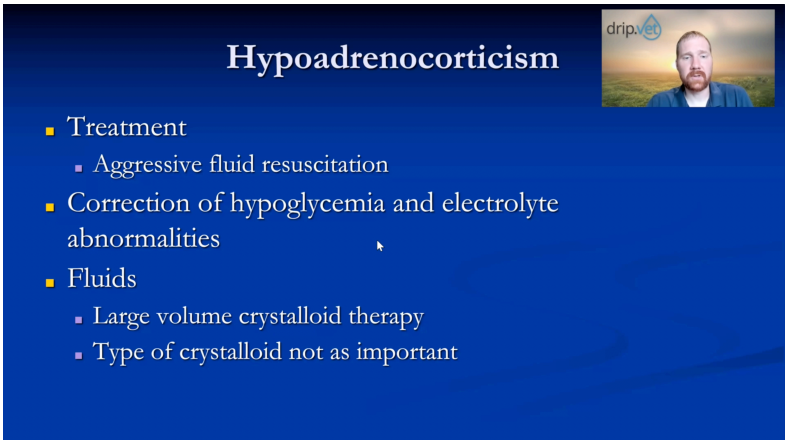



Some of the things that you may see when you're running diagnostics. You run a CBC and actually a lack of a stress leukogram may indicate or be concerning for, or supportive of, a diagnosis for hypoadrenocorticism. Just showing that they're not producing cortisol, so the cortisol is not able to make the stress leukogram. Hypoglycemia. They may be azotemic. Often times, that's a pre-renal azotemia. These dogs tend to be pretty profoundly hypoperfused. Then of course electrode abnormalities-- hyponatremia and hyperkalemia being the most common ones.

And then if you take those numbers and you do the sodium potassium ratio, less than 27 is considered suggestive, and then less than 23 is considered highly suggestive. So if you see a patient who has a sodium-potassium ratio of 22 and is hypoglycemic and is azotemic, that should really be quite high on your list of differentials and you'd really want to kind of rule out an Addisonian crisis before you did a bunch of other diagnostics, looking for another reason.

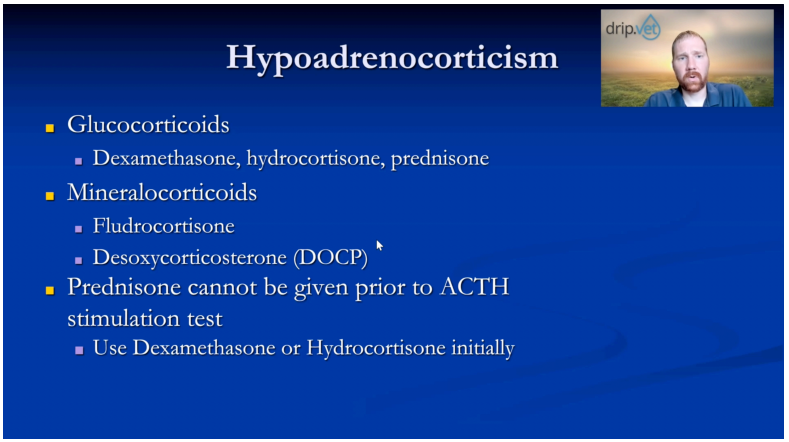
The definitive diagnosis, though is really through the ATCH stimulation test. It's been a while now. They've been talking about running just resting cortisol on these patients. If you do run a resting cortisol and it's greater than two, then that is considered to rule out. hypoadrenocorticism.

So you can say that's three, OK, they don't have that. But if it's less than two, it's only suggestive and it still requires an ACTH stimulation test in order to get a definitive diagnosis. If it's less than two and you don't want to sort of treat them forever based off of just a resting cortisol, you do want to make sure you actually run a ACTH stimulation test.




So a treatment for an Addisonian crisis. Patient comes in collapsed, hypoglycemic, bradycardic, and, let's say hypotensive. You're going to want to do pretty aggressive fluid resuscitation with these patients. These are patients that I am continually amazed at how many fluids they require, really. They tend to be quite hypovolemic. Even in the patients who come in walking sometimes into the door, these patients end up being quite hypovolemic. There's a lot of vasoconstriction going on, so they're compensating quite well for the hypovolemia. But they're oftentimes profoundly hypovolemic and require lots and lots and lots of fluids. So I just like to pump them full of fluids and really resuscitate them. And sometimes, you really just can't fully resuscitate them until you supplement them with either corticosteroids or mineralocorticoid.

You also want to, of course correct any electrolyte abnormalities, treat hypoglycemia like we already talked about with dextrose. And then, like I said, with fluids, they oftentimes need a really large volume. And if you remember back to our conversations about different types of fluids, any isotonic crystalloid is really sufficient. I think we had a conversation maybe around the use in say black cats or something. Sometimes people say, well use normal saline and don't use LRS or whatever because they need the sodium, they don't need the potassium. But it really doesn't matter. Certainly 0.9% sodium chloride would be a great fluid if you have it. But any isotonic crystalloid is really going to be sufficient. Really, they just need a lot of it.




And then, of course, we need to treat the underlying problem. So this is typically going to be the administration of glucocorticoids as well as mineralocorticoid. So it's important, if you have not yet run the ACTH stimulation test, that you don't give them a medication like prednisone that is going to interfere with the test. So you want to stick with something like dexamethasone or hydrocortisone initially, and then once you have the samples for the test, then you can go ahead and start them on prednisone if need be.

And then the mineralocorticoid, your options are typically like fludrocortisone or DOCP. The fludrocortisone actually has both mineralocorticoid and glucocorticoid function. So a lot of times, you don't need to supplement with prednisone on top of that. Sometimes you still do need to give them a small amount but a lot of times, that's sufficient. The DOCP is a mineralocorticoid only. So there is not any glucocorticoid in that, so you always need to supplement that with prednisone on top of that.