12 Lead ECG Review Transcript

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McKinney, Jared started transcription

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All right.
Thank you for joining us for our first portal education video.
We're really excited about this and look forward over the course of the next few videos to talking about multiple topics including general 12 lead interpretation, interpretation of the 12 lead in the setting of STL elevation, as well as presentation of acute coronary syndrome O you'll have the opportunity to meet Doctor Kailey Winkler, who is our EMS fellow this year.
And I'm Jared McKinney.
I'm one of the emergency medicine faculty at Vanderbilt, and I also have the opportunity to serve as the associate medical director for Nashville Fire Department as well as medical director for our Life Flight Ground and event Medicine divisions.
So let's get started.
Obviously 12 leads really have a really important role in the prehospital setting for patient assessment in a wide variety of patient presentations, not just chest pain.
And the appropriate interpretation of those 12 leads becomes important for patient care decisions as well as other things such as hospital destination and alerting hospitals prior to arrival.
For stemmes, I think it's super important when you're looking at 12 leads to have a method for reading those and do the same thing every time.
It's easy to get lost if you're trying to look at all 12 leads at once, especially if there's things such as artifact, lots of activity, a WAVY baseline, and so on.
So have a method if you already have a method for reading 12 leads, please stick to that if you do not.
Here's one idea of how you can do so.
So when I get a 12 lead, the first thing I think about is is the rate faster slow.
I then look at the QRS complex and ask is it wide or narrow?
Next is the rhythm.
Regular or irregular?

Are there P waves or not?
And are those P waves related to the QRS complex?
And then finally, are there any changes consistent with this schema or other pathology in a subsequent video, we'll talk about looking at the 12 lead for a schemonia and the other pathology piece really depends on patient presentation.
A good example is when you get a 12 lead on a patient who had a syncopal episode.
You're going to look for certain things that could have led to that syncope, such as prolonged QT findings of Brugada syndrome and so on, so that other pathology piece really depends on presentation.
As far as what you're going to look for on that 12 lead?
Next I look at the rhythm strip on the bottom of the 12 lead and block everything else out.
I'm looking for a way before every QRS and a QRS after every P wave and then looking at that rate.
If it's fast, it's going to send you down your tech acordia algorithm, and obviously if it's slow, it's going to send you down your bradycardia algorithm.
You'll have the rate on the top of the 12 lead.
You can also look at the space between each QRS complex.
If there's one box between each QRS complex, you have a rate of 300.
If there are exactly 2 boxes or rate of 150 and so on.
So a pretty quick way to determine rate as well.
Here's a standard normal 12 lead.
This is normal rate.
It's narrow.
There's waves followed by QRS complexes.
So normal run of the Mill 12 lead KG.
Now, if you're dealing with a tachycardia ask are there consistent P waves, and do all of those P waves look the same?
If there are no P waves, is that rhythm regular or irregular?
If you have a fast, irregular rhythm, the first thing you're gonna think about is atrial fibrillation.
Then ask yourself, is that QRS wide or narrow?
So are you dealing with a wide complex tachycardia or a narrow complex tachycardia?
And then the other thing that I always consider is if you have a heart rate that is

stuck at 150 beats per minute and does not vary over a period of time, think could this be atrial flutter?
So here's some examples.
This is a good example of a narrow complex tachycardia.
If you look at the rhythm strip, this is regular in.
There are no discernible P waves, so this would be a good example of a supervisor or tachycardia.
Do you look at this?
This is fast.
It's narrow.
It's regular, but this is a good example of your heart rate being stuck at 150 without variation.
So if you look at QRS complexes, there are two boxes between each QRS complex almost exactly.
So you're dealing with a rate of 150.
That's not varying, so I'm going to immediately ask, could this be atrial flutter?
Here's a good example of a narrow complex tachycardia, and if you look at V1, you can see that the rhythm is irregular O.
This is a narrow, complex irregular tachycardia consistent with atrial fibrillation.
Now, if your rate is slow, you're going to ask a few other questions first.
Could this be a first degree block?
Is that PR interval greater than 200?
Next, could this be a second degree block and then if this is a second degree block, what type are you dealing with?
A type one or a Winky Bock.
Are you dealing with a Type 2 second degree or could you have a 2 to one block which will show examples of and then finally, is this a third degree heart block?
Obviously patients with third degree heart block can become unstable very quickly and this often poor 10s of poor prognosis.
So you want to recognize this quickly?
The other thing I always think about in the setting of bradycardia is.
Could this patient be hyperkalemic?
We all learn about peak to TT waves and wide QRS complexes in the setting of hyperkalemia, but you can also have isolated bradycardia, so something else to consider.

Here's a good example of a bradycardia if you look at the rhythm strip at the bottom.
The Group of QRS complexes in the middle are very regular, and then you get a pause and if you look at the P waves, there's a wave followed by a QRS.
Another wave followed by a QRS.
And as you March along those the PR interval becomes longer until ultimately you have a dropped beat.
So you have a P wave followed by no QRS complex.
This would be a good example of a type one second degree block or Winky Bock.
Now, if all of the PR intervals were staying the same until ultimately you had a dropped beat, meaning a wave followed by number Q complex, that would be a second degree Type 2.
Here's a good example of a 2 to one block and this becomes difficult to know if this is a Winky Bock or a Type 2 second degree because you're blocking dropping every other beat.
So you have a P wave followed by a QRS complex and then a P wave with no QRS, complex following and a dropped beat.
So this is a good example of a 2 to one block.
This one you obviously see that the rate is incredibly slow.
There are P waves, but those P waves are marching along at their own rate and are not associated with the QRS complex.
O if you look at the rhythm strip on the bottom, the P waves are marching along and not conducting the QRS complexes.
You also have P waves that are buried in the QRS complex and the T wave.
The QRS complexes are also marching along at a regular rate, doing their own thing, so this is a good example of a third degree AV block.
Anytime you see P waves buried in QRS complexes or T waves in the setting of bradycardia, think third degree block.
So this is another good example of a third degree block, the rhythm strip on the bottom you have P waves that are at their own rate and some buried in the QRS complexes that are not conducting those Q complexes.
So this is another example of a third degree A/B block.
So again, if you try to read all 12 leads at the same time, it's easy to get lost in EKG O have a method for reading ekgs do that every time, every EKG.
And if you don't have a method, then ask yourself is the right fast or slow?
Is the QRS wide or narrow?

Is the rhythm regular or irregular?
Are there P waves or not, and are they related to the QRS complex?
And then finally, are there any changes consistent with the schema EA or other pathology?

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