

Difference Between Sinus Arrest and Sinus Block

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Key Difference - Sinus Arrest vs Sinus Block

[SA node](#) is an important part of the conducting system of the heart. It generates electrical impulses that are transmitted throughout the myocardium. In sinus arrest, this generation of impulses stops due to various pathological conditions. Defects in the transmission of impulses generated in the SA node are the cause of sinus block. Accordingly, **in sinus arrest, electrical impulses are not properly generated whereas in sinus block although there is no problem with the production of electrical signals, the signals are not properly transmitted into the myocardial cells.** This is the **key difference** between these two conditions.

What is Sinus Arrest?

Sinus arrest is due to the sudden cessation of the generation of impulses by SA node for more than 2 s. Due to the lack of electrical signals coming from the SA node the contraction of [cardiac muscles](#) also stops. Consequently, cardiac output decreases resulting in a drop in blood pressure also. If impulses are not generated for a period of more than 6 s emergency procedures have to be initiated to protect the patient's life.

Causes

- [Hypoxia](#)
- Myocardial ischemia
- Hyperkalemia
- Adverse effects of some drugs

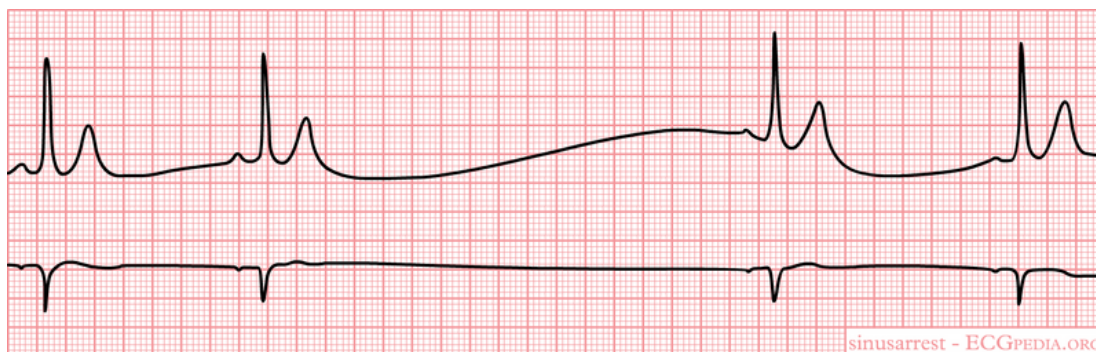


Figure 01: ECG Changes in Sinus Arrest

Management

If there is an increase in the vagal stimulation, it is recommended to observe the patient for at least a day rather than promptly jumping into treatments. Any underlying pathology has to be aptly treated.

What is Sinus Block?

In some rare conditions, the entrance of the impulses from sinoatrial node (SA node) into the atrial muscles is blocked. This is clinically identified as a sinus block. In an [ECG](#) this condition is characterized by the absence of a P wave which is accompanied by the relaxation of the atrial muscles. But surprisingly, due to the lack of impulses propagating via SA node, [AV node](#) starts to produce its own impulses. This results in the contraction of ventricles in a slow but steady rhythm giving rise to a prolonged but otherwise unaltered QRS complex.

There are three main categories of sinus block namely,

- First-degree block

There is a delay in the transmission of impulses into the [atria](#), but no impulses are blocked. This does not produce detectable ECG changes.

- Second-degree block

Second-degree blocks are again divided into two subcategories

Type I – there is a gradual increase in the duration between the generation of impulses and their propagation into the atria which ultimately results in the blockage of an impulse passing onto the atria.

Type II – the time gap between the generation of impulses and their propagation onto the atria is prolonged, but it remains constant. An occasional impulse is lost without being transmitted to the atria.

- Third-degree block

None of the impulses are conducted into the atria.

Causes of Sinus Block

- Sick sinus syndrome
- Increased vagal stimulation
- [Myocarditis](#) and [myocardial infarction](#)
- Use of digoxin and [beta blockers](#)

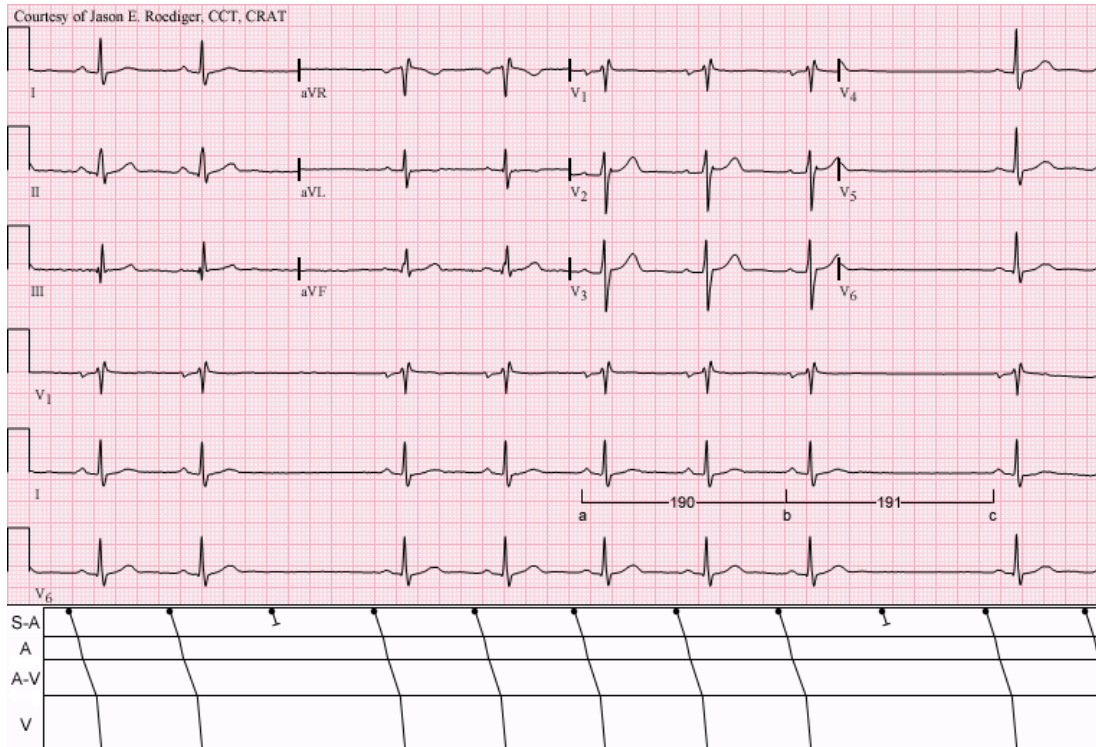


Figure 02: ECG Changes in Sinus Block

Clinical features include bradycardia and those due to the decreased cardiac output such as fatigue and faintishness. Symptomatic sinus block has to be treated by the implantation of an artificial [pacemaker](#).

What are the Similarities Between Sinus Arrest and Sinus Block?

- In both conditions, there is an impairment of the electrical activity of the heart.
- The usual symptoms of sinus arrest and sinus block are bradycardia, fatigue, faintishness

What is the Difference Between Sinus Arrest and Sinus Block?

Sinus Arrest vs Sinus Block	
Sinus arrest is due to the sudden cessation of the generation of impulses by SA node for more than 2 s.	Sinus block is due to the blockage of the transmission of impulses from SA node to the atria.
SA node	

Impulses are not generated by the SA node.	Impulses are generated by the SA node.
Causes	
<p>Sinus arrest is due to,</p> <ul style="list-style-type: none"> • Hypoxia • Myocardial ischemia • Hyperkalemia • Adverse effects of some drugs 	<p>Causes of sinus block are,</p> <ul style="list-style-type: none"> • Sick sinus syndrome • Increased vagal stimulation • Myocarditis and myocardial infarction • Use of digoxin and beta blockers
Treatment	
If there is an increase in the vagal stimulation, the patient should be observed for at least a day. Any underlying pathology has to be aptly treated.	Symptomatic sinus block has to be treated by the implantation of an artificial pacemaker.

Summary - Sinus Arrest vs Sinus Block

Sinus arrest and sinus block are two conditions which are due to the dysfunction of the SA node. The sinus arrest is due to the cessation of the firing of SA node whereas sinus block is due to the blockage of the electrical impulses generated by the SA node. So the difference between these two conditions is, in sinus arrest the pathology is in the generation of electrical impulses but in sinus block, [pathology](#) lies in their transmission.

Reference:

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- 2.Hall, John E., and Arthur C. Guyton. Guyton and Hall textbook of medical physiology. 12th ed. Philadelphia, PA: Elsevier, 2016. Print.

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How to Cite this Article?

APA: Difference Between Sinus Arrest and Sinus Block.(2017 December 07). Retrieved (date), from [http://differencebetween.com/difference-between-sinus-arrest-and-vs-sinus-block /](http://differencebetween.com/difference-between-sinus-arrest-and-vs-sinus-block/)

MLA: "Difference Between Sinus Arrest and Sinus Block" Difference Between.Com. 07 December 2017. Web.

Chicago: "Difference Between Sinus Arrest and Sinus Block." Difference Between.Com. [http://differencebetween.com/difference-between-sinus-arrest-and-vs-sinus-block /](http://differencebetween.com/difference-between-sinus-arrest-and-vs-sinus-block/) accessed (accessed [date]).



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