

## Case Report

# “Otic Angina”: A Rare Manifestation of Ischemic Heart Disease

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## Abstract

We present a case of otalgia and external pinna pain on exertion as referred pain in an angiographically proven patient of coronary artery disease. Otalgia relieved after with anti ischemic therapy. It is a rarely reported manifestation of coronary artery disease in the literature.

**Keywords:** Referred pain; Coronary artery disease; Otalgia

## Abbreviations

LAD: Left Anterior Descending; LCX: Left Circumflex; RCA: Right Coronary Artery; PDA: Posterior Descending Artery; ECG: Electrocardiography; CPK-MB: Creatine Phosphokinase - MB; LAO: Left Anterior Oblique; RAO: Right Anterior Oblique

## Introduction

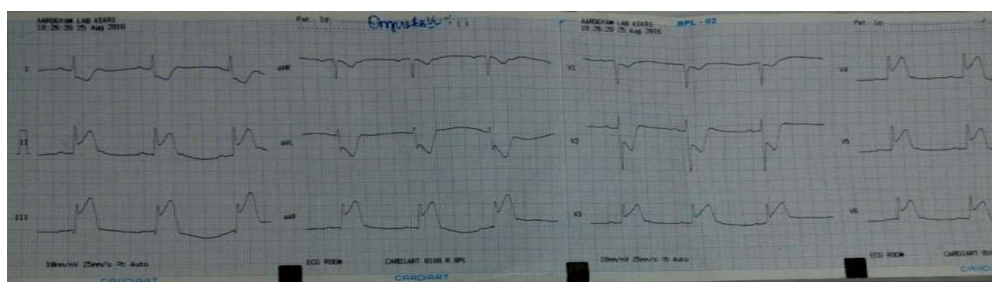
Pain chest is one of the most common symptoms in the present scenario presenting to the emergency and outdoor patient department. There is a wide spectrum of presentation of the ischemic pain as classical angina and angina equivalent. The common presentation of myocardial infarction is with diffuse prolonged (20 minutes) precordial chest pain associated with profuse sweating, chest heaviness and squeezing sensations. Ischemic pain may radiate from jaw to the umbilicus, both shoulders and up the fingers. The varied site of referred pain is due to variable neuronal contribution to cardiac innervations, so the referred pain is appreciated at different sites by the different persons. Rarely the ischemic pain may radiate to the ears also, that may confuse the clinician with the other primary and secondary causes of the ear ache (otalgia).

Sensory innervations of the ear arise from the V, VII, IX, and X cranial nerve and C2-C3 spinal nerves. Abnormality contributing for S3-S4 neural segment may cause referred pain in ear and contributes to primary as well as secondary otalgia [1]. Referred otalgia which may be seen in a wide spectrum of pathologies, is a frequently encountered symptom in temporomandibular joint abnormalities, dental diseases, pharyngotonsillitis, pathologies involving insertion site of the

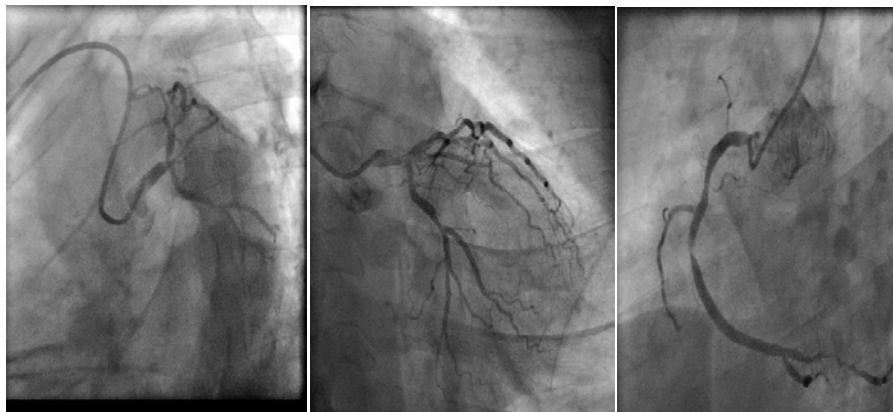
sternocleidomastoid muscle to the mastoid muscle, masseter muscle spasms, and arthritis of the cervical vertebra [2]. Otalgia secondary to myocardial infarction is very rarely reported [3,4].

## Case Report

A 60-year-old male presented with history of chest discomfort and profuse sweating since 5 hours. He had also complains of numbness, heaviness and pain in the right ear on exertion since last 7 days intermittently (3-4 episodes per day lasting for about 10-15 minutes each time). The earache (otalgia) was precipitated by doing some exertion and relieved with taking rest. The pain and numbness was quite similar as character in each episode. There was no history of fever, ear discharge, teeth ache and trauma. There was no such past history. General physical examination revealed pulse rate 60 /minute (regular), blood pressure 100/60 mmHg, respiratory rate 18/minute, jugular venous pressure normal, cardiovascular and other system examination was normal. ECG showed ST elevation in leads II, III, a VF and V3-V6. There was ST depression in lead I; a VL, V1 and V2 (Figure 1). Patient was thrombolysed with streptokinase 1.5 MU and other guidelines based treatment was given. 2D-echocardiography revealed antero-inferoseptal, anterosegmental and anterolateral hypokinesia at base and mid level with ejection fraction of 45%. Specialist's opinion was taken regarding the otalgia, there was not any significant finding that could explain the cause of this typical otalgia. CPK -MB level were 50 U/L and other biochemical profile was normal. After 8 hours (post myocardial infarction) patient again developed earache associated with chest heaviness. Antianginal drugs were upgraded by adding oral trimetazidine (60 mg/day).



**Figure 1:** The ECG showing ST elevation in lead II, III, aVF, V3-V6 and ST depression in I, aVL, V1 and V2.



**Figure 2:** Various angiographic views - A. RAO caudal – LCX 70%; B. LAO caudal – LAD 80%; C. LAO view – RCA 90%; PDA 70%.

Coronary angiogram revealed left main stenosis (70%) with triple vessel involvement. Stenosis was 80%, 70%, 90% and 70% in LAD; LCX; RCA and PDA respectively with plaque in ostial site of RCA. RCA was found to be diseased from proximal to mid site (Figure 2). Percutaneous transluminal coronary angioplasty with drug eluting stent was done in LAD; LCX; and RCA while percutaneous balloon angioplasty was done in PDA. Patient was kept in observation for next 72 hours. Patient was totally asymptomatic during hospitalization and also not complained for the previous ear ache episodes in follow-up. So, with the above description and cath findings; the myocardial ischemia was thought to be the basic cause of otalgia.

## Discussion

Otalgia is an unpleasant experience causing people of to visit hospitals. Since the ear sensory nerve supply originates from different nerves, pathologies of different head and neck structures can manifest themselves as otalgia, causing patients to seek medical attention.

The incidence of referred otalgia is variable in different studies varying from 12-46 % in different studies. Toothache (45-62.8 %) is the most common cause followed by pharyngitis (24.5%), the temporomandibular joint (8.5%), sinusitis (2.1%), pharyngeal abscess (1.1%) and Bell's palsy (1.1%) [5,6].

Autonomic dysfunction may also be the basic patho-physiological basis for the referred otalgia. In cases where this autonomic dysfunction involves the branches of the vagus nerve, secondary otalgia may occur. The Sinoatrial (SA) node is innervated by the

right vagus, which receives blood supply from the RCA. The possible explanation of the referred otalgia may be the partial occlusion of the RCA that compromised the parasympathetic fibers of the right vagus.

## Conclusion

Referred otalgia, renamed as “otic angina” is a rare but an important angina equivalent symptom across the spectrum of ischemic heart disease. Therefore physician awareness of the rare entity is meaningful to prevent the under diagnosis of the significant coronary artery disease.

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