

# Dental Pathology Overlapping With Cardiac Origin Of Jaw Pain Leading To Myocardial Infarction: A Case Report

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## Citation

H Attar, N Attar. *Dental Pathology Overlapping With Cardiac Origin Of Jaw Pain Leading To Myocardial Infarction: A Case Report*. The Internet Journal of Emergency Medicine. 2010 Volume 7 Number 1.

## Abstract

Jaw pain with no accompanying pathology should raise suspicion of pain of cardiac origin. However, jaw pain associated with dental infection and a soft swelling may mask the prodromal stage of cardiac disease. In a unique case of a 43 year old Indian woman who came to the Emergency Room with a complaint of right-sided jaw pain; infection and swelling due to a right-sided carious tooth was diagnosed as being the cause. After dental treatment, her pain subsided. Six weeks later, she returned, claiming she had "exactly the same pain". Doubts of failed dental treatment were unfounded and a neuropathic pain disorder was suspected. This oversight culminated in an acute myocardial infarction a day later.

## INTRODUCTION

Jaw pain with no accompanying pathology should raise suspicion of pain of cardiac origin. However, jaw pain associated with dental infection and a soft swelling may mask the prodromal stage of cardiac disease. We report a case of a female patient who complained of jaw pain and was found to have a dental infection. Post-treatment pain continuation eventually culminated in an acute MI.

## CASE PRESENTATION

A 43 year old Indian woman with a body mass index of 22.7 (weight: 58 kilograms, height: 1.6 meters) visited the ED complaining of intermittent right-sided jaw pain. She was eventually sent for a dental check-up by the examining surgeon.

On inspection, a right-sided sub-mandibular swelling was visible. Oral examination revealed a carious lower right second molar displaying pain on percussion. Radiographs were suggestive of an abscess. Other findings included periodontitis and multiple carious teeth. Low grade fever was noted. On questioning, she described occasional flashes of pain in the right side of her jaw since 2 months. She claimed the bouts of severe pain lasted 2-12 hours at a time and occurred twice to thrice in a month. The pain did not respond to over-the-counter medication, was continuous at rest, non-radiating and had no aggravating/relieving factors. Though this caused sleepless nights and occasional nausea, she was only convinced to visit the hospital when a swelling

became apparent.

The patient informed that her lower right first molar was extracted due to similar pain around 1 month ago. No case records were available. No history of migraine/headaches, diabetes mellitus, hypertension or hypercholesterolemia was given. She had no complaint of breathlessness, chest pain or palpitations. She denied smoking or taking recreational drugs and was not on any hormonal therapy. Family history was non-contributory. No allergies were noted.

The patient consented to root canal treatment of the molar so as to resolve pain. She refused all further recommended dental treatment. The patient was given a course of amoxicillin and metronidazole with ranitidine and the swelling gradually subsided. Treatment was completed in 10 days, after which she was pain-free.

Six weeks later, the patient returned to the ED claiming she had "exactly the same pain". She demanded pain medication from the emergency physician. She complained of exhaustion and anxiety due to pain, expressed frustration and demanded extraction of the treated molar. There was no swelling or pain on percussion of the molar. Radiographs revealed no pathology. No other symptoms were mentioned. She was afebrile, Pulse: 96/minute, thready, Blood pressure: 128/86 mm Hg in supine position, Respiratory rate: 18 breaths/minute.

She was referred for a neurological consult with a differential diagnosis of neuropathic facial pain (phantom

tooth pain), atypical facial pain and trigeminal neuralgia.

The next day, she was rushed to hospital by her husband. She had severe right-sided jaw pain and breathlessness. Vital signs on arrival at the ED were Pulse: 100/minute, Blood pressure: 136/84 mm Hg, Respiratory rate: 24 breaths/minute, temperature of 37.2°C and oxygen saturation of 88% on room air. Echocardiogram revealed tachycardia with a normal cardiac axis. No conduction defects were noted. Q waves were noted in leads III, aVF with ST elevation in leads aVL, V2-V4. Inverted T waves were noted in leads III, aVF.

Laboratory tests revealed neutrophilic leucocytosis (Total Leucocyte Count- 11800 cells/mm<sup>3</sup>, Neutrophils- 84 cells/mm<sup>3</sup>). Her haemoglobin level was 11.5 gram percent. Tests showed total serum cholesterol of 242 mg/dl, HDL cholesterol of 38mg/dl, LDL cholesterol of 134mg/dl and triglycerides of 78mg/dl. Fasting and post-prandial blood glucose levels and serum electrolytes were within normal limits. Raised levels of cardiac troponin T were seen. No findings were consistent with coagulation and fibrinolysis disorders. The patient was diagnosed as having an acute anterior wall MI. The echocardiogram was also suggestive of a probable old inferior wall infarction.

The patient was managed as a case of MI, discharged symptom free after a week and was prescribed standard medications. She was advised to implement lifestyle changes, complete periodontitis treatment and repeat tests for a lipid profile before the next follow-up visit.

## **DISCUSSION**

In this case, prodromal symptoms of MI such as jaw pain, sleep disturbances, anxiety, and nausea were all overlooked based on the existence of confirmed and recent dental history and symptomatic dental pathology. The co-existence of dental pathology and an underlying cardiac condition was not adequately explored.

Several reports have demonstrated that improper diagnosis leads to unnecessary dental treatment [1, 2]. However, our patient's oral condition was poor and dental treatment was indicated. Correct management of the dental infection resulted in resolution of swelling.

Careful history-taking regarding the pain is of paramount importance.[1,2] It has been seen that the pain descriptors "pressure" and "burning" are statistically associated with pain from cardiac origin, while "throbbing" and "aching"

indicate an odontogenic cause[3]. Our patient's history revealed no features of ischaemic heart disease. Pain aggravation on physical activity and relief at rest or bilateral nature of the pain would have pin-pointed cardiac involvement. Symptoms being partly odontogenic in nature; did not follow the exclusive pattern of pain of cardiac origin.

In the patient's next hospital visit, emphasis was placed on previous dental treatment at the site of pain and a neurological explanation was sought. If her frustration, stress and chronic fatigue had been recognized as symptoms at this stage, an early diagnosis would have been made.

Previous findings indicate that women experienced prodromal symptoms for an average of 4 to 6 months [4]. Graham et al. discovered that a small proportion of patients with acute coronary syndromes seek medical attention for prodromal symptoms in the ninety days before acute coronary syndromes. Pain and anxiety/fatigue were found to be the most common of these prodromes [5]. In another study, most women (95%) experienced prodromal symptoms. Women were most likely to rate the two most frequent prodromal symptoms, fatigue and sleep disturbances as severe in intensity [6]. The difficulty in correctly diagnosing an acute MI is reflected in the reported frequency of missed diagnoses found in emergency departments, which ranges between 2-27% in the developed world [7, 8, 9] Elevated serum triglycerides point to the probable cause of MI in this case.

Pain persisting after dental treatment often hints at treatment failure or a neuropathic pain disorder. The emergency physicians were guided by her recent hospital records which resulted in her referral to the Neurology Department. We urge that closer examinations of patients with pain and alert observation of presenting signs and symptoms be carried out in EDs. In this case, though dental problems were the proven cause of pain and other symptoms, it did not mean that cardiac causes had to be ignored.

Awareness and recognition of prodromal symptoms of MI is the only way to prevent a potentially fatal oversight.

## **ABBREVIATIONS**

MI: Myocardial Infarction; ED: Emergency Department

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