

Covid, Anxiety or is it Something Else?

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Abstract

Many illnesses present with similar symptoms and signs.

Detailed inspection of clinical scenario and symptoms helps a clinician reach a diagnosis which would otherwise cause inevitable consequences.

This case discussion imparts an overview of diagnostic process and a rundown of how clinical reasoning is done. Diagnosis has important implications for patient care, research, and policy. Diagnosis has been described as both a process and a classification scheme, or a “pre-existing set of categories agreed upon by the medical profession to designate a specific condition” (Jutel, 2009).¹

The case describes paramount considerations in the diagnostic process, such as the roles of diagnostic dubiousness and time. It additionally highlights the mounting intricacy of health care, due to the ever-incrementing options for diagnostic testing and treatment, the expeditiously ascending levels of biomedical and clinical evidence to apprise clinical practice. (IOM, 2008, 2013b) The ascending intricacy of health care and the sheer volume of advances, coupled with clinician time constraints and cognitive inhibitions, have outstripped human capacity to apply this incipient erudition. To avail manage this intricacy, the case concludes with a discussion of the role of clinical practice guidelines in apprising decision making in the diagnostic process.

Keywords: Covid; Anxiety; Something Else

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An elderly 65year old woman was brought by an ambulance accompanied by her family to ER. She complained of chest pain, Palpitations and shortness of breath, duration of few hours.

Her past medical history includes being diabetic, hypertensive and an ischaemic heart disease patient.

Vitals: BP 160/85

PR 160

RR 30/MIN SPO2 99%

She was taken to female observation and an ECG was done for her.

Meantime, her daughter complained of similar symptoms chest pain and shortness of breath. She seemed anxious and worried for her mom. She was shifted on to another bed.

Her Mom's Ecg Is Shown Below

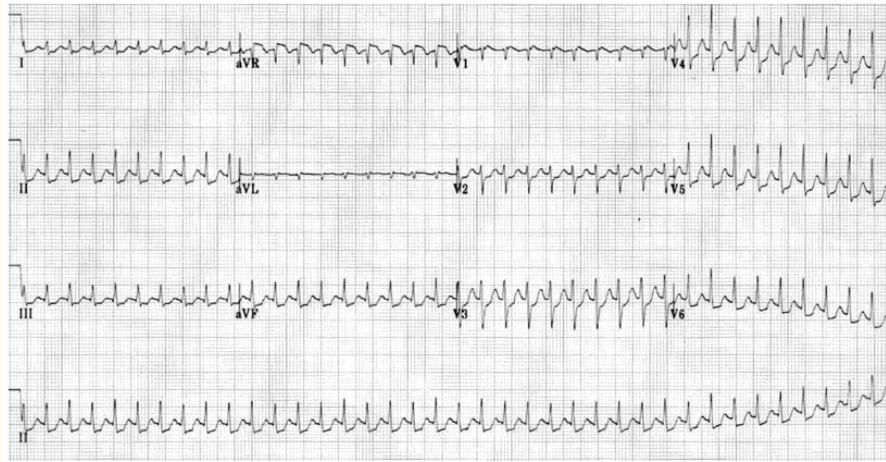


Figure 1

She was treated with adenosine 6mg, followed by two doses of 12 mg intravenously. There was no change in rhythm. She was then injected Isopten (verapamil) 5 mg iv slowly over 2-5 mins to which she responded and was off pain and felt better.

Her Follow Up Ecg Looked Like That

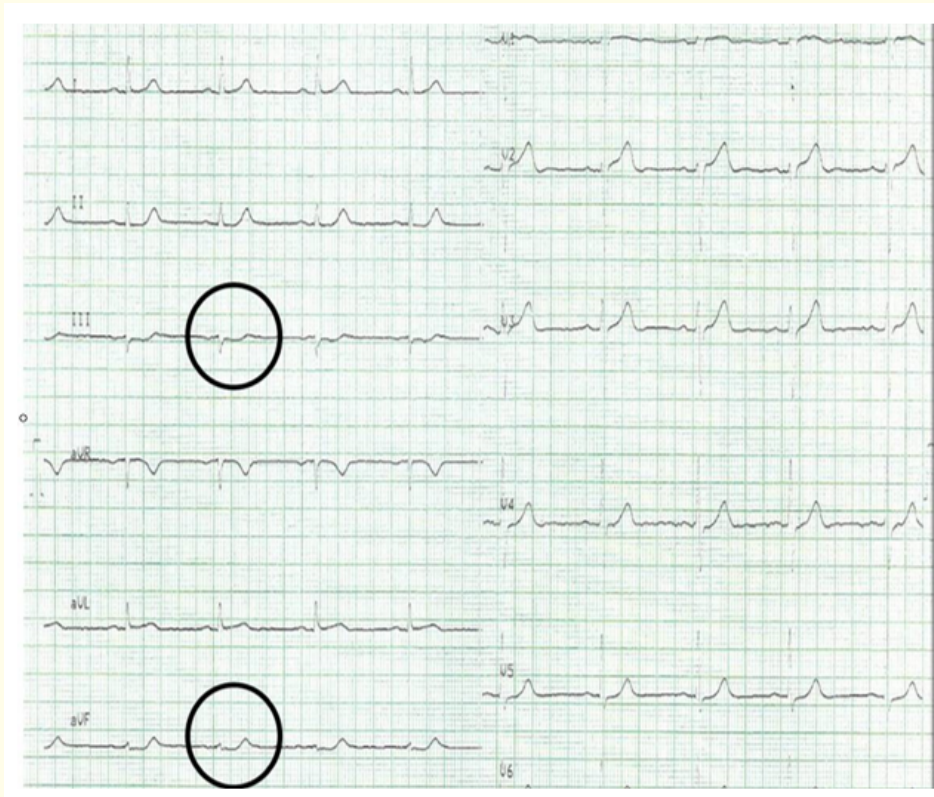


Figure 2

ST depression in inferolateral leads

Her troponin I stat in resuscitation room was found to be 0.6 ng/ml (cut off limit 0.06)

She was seen by a cardiologist in resus and admitted as a case of NSTEMI and started on anti-ischemic treatment in cardiac care unit.

Meanwhile, her daughter in observation was assessed by another colleague. She was feeling better and had no complaints and was diagnosed as a case of anxiety attack.

She's a previously healthy female with no past medical history. Her vitals stable, ECG showed a normal sinus rhythm and deemed fit to be discharged [1-11].

Another family member arrived in ER.

Confusingly, son complained of headache since morning and informed that his two children and wife were complaining of headache and shortness of breath too.

He was feeling much better now but he seemed worried about the kids and wife sleeping at home.

He's a previously healthy male and with no past medical history. A smoker (with 20 years of smoking history and consuming 10 cigarettes/day). His vitals were stable.

The reason behind the family experiencing these symptoms had to be investigated. Other differentials required to be ruled out.

After a detailed history taking with the son and daughter, it was found that the family had a faulty air conditioner. The air conditioner was not keeping them cool and they found it difficult to get someone to fix it due to sudden lockdown implemented by government during the Covid19 pandemic. They had no choice but to stay indoors.

Interesting!

CCU was informed and her COHB Levels tested which were high.

Daughter's COHB was found to be high in ER, and was treated with high flow oxygen and discharged after she improved symptomatically.

Son was tested for High COHB level, treated with high flow oxygen and discharged after symptoms resolved. Children were asked to visit the pediatric emergency and tested for high COHB levels and admitted. They were discharged after 24 hours observation and follow up was arranged.

And the old woman was discharged from CCU after 3 days on full anti ischemic treatment with a follow up after 4 weeks.

A Defective Air Conditioner Can Cause Carbon Monoxide Poisoning

Can A/C Unit Cause Carbon Monoxide Poisoning?

When the weather is hot, many people avoid going outside for days while running the A/C at top speeds.

While staying indoors for too long isn't good for your health, a malfunctioning A/C can make matters worse.

What Is Carbon Monoxide?

Carbon monoxide (sometimes referred to as CO) is a colorless, odorless gas produced by carbon-containing burning material.

Brain injury and death can be caused by carbon monoxide poisoning. You can't see it, smell it or taste it, but you can get killed by carbon monoxide.

It is known as the "silent killer" because carbon monoxide is an odorless, tasteless, and colorless gas.

Popular household appliances emit carbon monoxide. Carbon monoxide produced by these machines will accumulate when not properly ventilated.

More is learned about acute CO poisoning, but chronic poisoning information and understanding is slowly evolving. There is a clear likelihood that low level exposure to CO is responsible for widespread and severe morbidity, but due to a number of presentations, obscure symptoms, and a lack of knowledge of the issue, the clinical syndrome produced is often ignored.

In the USA, relatively minor increases in atmospheric levels of CO due to emissions have been found to influence the rate of admission to emergency departments with different complaints.

This gives rise to the likelihood that a substantial number of patients will be seen in emergency departments in the United Kingdom with complications induced by, or disease-related states exacerbated by CO contamination without personnel being aware of the reality.

There is also the problem of acute toxicity from household gas equipment and other causes, resulting in signs and symptoms not recognized by medical practitioners.

Clinical features

Acute poisoning

CNS: headache, nausea, dizziness, confusion, inadequate mental state, incoordination, ataxia, epilepsy, and eventually coma.

CVS: Dysrhythmias, Ischemia, hypertension or hypotension (exaggerated in patients with anemia or underlying cardiovascular disease)

GI: abdominal pain, nausea, diarrhea and vomiting

RESP: dyspnea, tachypnea, pain in the chest, palpitation

Others: non-cardiogenic pulmonary oedema

Rhabdomyolysis

Hyperglycaemia

Disseminated intravascular coagulation

Bullae

Alopecia

Necrosis of the sweat gland.

Chronic poisoning

- Headaches
- Changes in personality, low focus
- Dementia, psychosis,
- Parkinson's, ataxia,
- Peripheral neuropathy and lack of hearing.

Co exposure sources

- Fire
- ovens
- Portable heater
- Auto exhaust (e.g. suicide attempt)
- Carbon grills
- Propane powered forklifts
- Gas-powered concrete saws
- Inhalation of spray paint
- Swimming alongside a motor ship
- Solvents and polish removers (metabolised to CO in the liver)

Investigations

Bedside

- Arterial blood gases
- Hb CO (high levels are important, but low levels do not preclude exposure)
- Lactate (hypoxic tissue)
- PaO₂ should be normal, SpO₂ should be accurate only if measured (not calculated from PaO₂)
- Met Hb (excluding)

- ECG: sinus tachycardia, ischaemia
- Urinalysis (positive for albumin and glucose in chronic intoxication; b HCG in pregnancy)
- Typical clinical symptoms and signs relative to CO Hb (Normal = 0.5%):
- <10% (nil, commonly seen in smokers)
- 10 - 20% (nil or ambiguous non-described symptoms)
- 30 - 40% (headache, tachycardia, confusion, fatigue, nausea, vomiting, collapse)
- 50 - 60% (coma, convulsions, Cheyne-Stokes breathing, arrhythmias, ECG changes)
- 70 - 80% (circulatory and ventilatory failure, cardiac arrest, death).
- However, the CO Hb per cent varies quickly and variably, but usually to a greater degree in the seriously poisoned. As a result, there is no connection between the preceding symptoms and signs and the measured CO Hb per cent.

Laboratory

Full Blood Count (mild leukocytosis)

Blood sugar level (hyperglycemia)

Urea and electrolytes (hypokalemia, acute renal failure from myoglobinuria)

CK (rhabdomyolysis)

Liver function Test derangement (ischemia)

ethanol level (other drug toxicity)

cyanide level (industrial fire, cyanide exposure)

Imaging

CT/MRI brain: may demonstrate cerebral edema, cerebral atrophy, basal ganglia injury or cortical demyelination

CXR: pulmonary edema.

Management

Resuscitation

FI02 1.0 (Continue until patient asymptomatic or Carbon monoxide level less than 10 percent)

Cardiac monitoring

Intubate the comatose patient.

Specific treatment

High flow oxygen through a non-rebreather mask until asymptomatic or for 24 hours when fetal well-being is measured while pregnant.

Hyperbaric oxygen: the function is unknown, 3 atmospheres can shorten the half-life of carboxy Hb from 6 hours to approximately 24 minutes.

Supporting treatment and monitoring

Look for and treat the cause and the complications.

Hyperbaric Oxygen Therapy

TABLE 1. Indications and contra-indications for HBOT in patients with severe CO poisoning, with reference to the Undersea and Hyperbaric Medical Society

Indication/contra-indication	Description
Indications of HBOT for patients with severe CO poisoning features*	<ol style="list-style-type: none"> LOC or history of LOC suspected to be caused by CO poisoning Evidence of myocardial ischaemia with typical chest symptoms or electrocardiogram changes COHb level >25% on admission (not absolute) Pregnancy
Absolute contra-indications for HBOT	<ol style="list-style-type: none"> Untreated pneumothorax Refusal by patient or their proxies High requirement of oxygen concentration (eg FIO₂ >0.5, mechanical ventilation is not a contra-indication) Some selected medications <ul style="list-style-type: none"> Doxorubicin—cardiotoxicity may occur Cisplatin—wound healing may be impaired Disulfiram—blocks the production of superoxide dismutase, which protects against oxygen toxicity Mafenide acetate—wound healing may be impaired
Relative contra-indications for HBOT	<ol style="list-style-type: none"> Haemodynamically unstable (need for vasopressor/inotropes and at risk during transportation) Asthma (medication required to control the condition) Chronic obstructive pulmonary disease/bullos emphysema Claustrophobia, emotionally unstable or seizures (medications, eg benzodiazepines, for controlling anxiety, insomnia, agitation, or seizures) Ear or sinus surgery Optic neuritis Recent thoracic surgery Upper respiratory infections Pacemakers (their technical specifications should be reviewed prior to treatment to avoid deformation)

Abbreviations: CO = carbon monoxide; COHb = carboxyhaemoglobin; FIO₂ = fraction of inspired oxygen; HBOT = hyperbaric oxygen therapy; LOC = loss of consciousness; PYNEH = Pamela Youde Nethersole Eastern Hospital

* Adopted in intensive care unit of PYNEH since 2008

Table 1

Differential Diagnoses

Acute respiratory distress syndrome (ARDS)

Alcohol toxicity or opioid toxicity

Depression and suicide

Diabetic ketoacidosis

Headache, labyrinthitis, meningitis or encephalitis

Migraine headache or tension headache

Paediatric hypoglycemia

Conclusion

Doctors and triage nurses will need to be mindful that patients with CO poisoning may visit the department on a regular basis.

Now days, we have a lot of patients visiting the emergency as shortness of breath or chest pain due to the Covid19 pandemic and anxiety related to deaths caused by this highly infectious disease or other personal reasons such as fear of exam results, loss or death of loved ones, disappointment and fears.

Certain signs and health situations should act as a cause indicator for further investigation.

If a breath scanner is not available, a venous sample to assess the concentration of COHB is the easiest test of choice. In cases where COHB levels are below the agreed standard range but chronic CO toxicity is still highly suspected, the patient should be advised to get all domestic gas appliances tested as a matter of urgency.

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