



Respiratory Distress Caused by Giant Parathyroid Adenoma

Ahmed Chekairi^{1*} and Mohamed Miguil²

¹*Department of Anaesthesia, Whittington Health, London, UK.*

²*Cheikh Khalifa Hospital, Casablanca, Morocco.*

Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/BJMMR/2017/33530

Editor(s):

(1) Murali P. Vettath, Department of Cardiovascular-Thoracic & Heart Transplantation, Director-International Center of Excellence in OPCAB surgery, Malabar Institute of Medical sciences, Govindapuram, Kozhikode, Kerala, India.

Reviewers:

(1) Pietro Giorgio Calò, University of Cagliari, Italy.

(2) Damyanti Agrawal, Banaras Hindu University, India.

(3) Serdar Özkan, Konya Medova Hospital, Turkey.

Complete Peer review History: <http://www.sciencedomain.org/review-history/19190>

Case Study

Received 19th April 2017

Accepted 21st May 2017

Published 25th May 2017

ABSTRACT

We report a rare case of a giant mediastinal parathyroid adenoma that caused acute respiratory distress in a patient admitted to the emergency department. Initial arterial blood gas analysis showed hypercalcemia that pointed out to the diagnosis of hyperparathyroidism. Further investigation revealed presence of parathyroid adenoma. Following medical treatment of acute respiratory distress and hypercalcemia, patient had a surgical procedure and safely discharged home.

Keywords: Respiratory distress; parathyroid; adenoma; hypercalcemia.

1. INTRODUCTION

Hyperparathyroidism is generally asymptomatic and is often revealed by complications secondary to hypercalcemia. It is generally due to a benign cervical adenoma [1]. Mediastinal localisation is rare and might delay diagnosis of the disease, as

the tumour is hidden and not accessible to palpation [2].

We report a case of patient who presented with severe respiratory distress due to a giant intrathoracic parathyroid adenoma that was incidentally revealed by hypercalcemia on the

*Corresponding author: E-mail: chekairi3@aol.com;

arterial blood gas results. We discuss the clinical presentation and management.

2. CASE REPORT

75-year-old woman, on angiotensin II inhibitor for hypertension disease, obese with body mass index of 34 kg/m² had suffered from chronic obstructive airway disease for more than a year, presented to the emergency department with respiratory distress. Her relatives reported she had confusion, hallucinations and insomnia for a week before admission. She refused food and drinks in the past 4 days.

On presentation, she was self-ventilating, respiratory rate higher than 20/min and oxygen saturation of 93% on air. She looked dehydrated with heart rate of 120 beats/min, blood pressure of 158/85 mmHg. Glasgow Coma Scale (GCS) was 11 out 15 (E: 3, V: 4, M: 4). A 100 mL of concentrated urine was drained following urinary catheterisation. A 12 lead electrocardiogram showed sinus tachycardia of 120 beats/min.

Initially, patient was treated at the emergency department for acute respiratory distress using repeated nebulised salbutamol 5 mg in 50% oxygen and hydrocortisone 100 mg intravenously.

The arterial blood gas (ABG) showed pH: 7.15, PaCO₂: 11.2 kPa, PaO₂: 8.51 kPa, ABEC: -3.8 mmol/L, HCO₃⁻: 20.9 mmol/L. The ABG also revealed hypercalcemia of 3.39 mmol/L.

Following initial treatment, patient was transferred to high dependency unit for further management.

Laboratory blood test confirmed hypercalcemia of 3.48 mmol/L and creatinine of 212 mmol/L.

A diagnosis of hypercalcemia was considered. Normo-saline was infused at rate of 150 ml/h and 80 mg of furosemide, 4 times a day were given intravenously. The diagnosis of hyperparathyroidism was consequently confirmed by parathormone serum level of 865.4 pg/mL, 20 times higher than normal levels (10-65 pg/mL). Protein electrophoresis and albumin levels were both normal.

Prednisolone 20 mg was given orally together with venous-thromboembolic prevention using enoxaparin 40 mg/day subcutaneously.

Neck echography did not reveal any mass. A cervico-thoracic CT scan showed enormous cervico-mediastinal mass that measured 10 x 7 x 5.6 cm and appeared to emerge from the lower pole of right parathyroid gland (Fig. 1). There was also deviation of the trachea and other mediastinal structure towards the left.

Echocardiography showed an ejection fraction of 65% with slight septal dyskinesia and the absence of increased pulmonary hypertension. Lung fields were clear on the chest X-ray.

There was good improvement of respiratory and cardio-vascular states of the patient in the first 3 days. In contrast, the neurological state progressed slowly and GCS remained low at 13 (E: 4, V: 4, M: 5) up to 3rd day.

A surgical review and a pre-operative assessment were carried out on day 4. Surgical procedure was planned the following day.

On day 5, patient had a thoracotomy and parathyroidectomy under general anaesthesia and invasive arterial monitoring. Tracheal intubation was uneventful. A cystic mass was



Fig. 1. CT scan showing large tumour pushing trachea to the left of the mediastinum

removed with blood loss less than 500 ml. Patient was generally stable throughout the surgical procedure.

Patient remained intubated and ventilated in the critical care unit and was extubated 36 hours later. On day 7, there was marked neurological improvement as such patient recognised members of her family.

Serum parathormone and calcium levels were respectively 75,5 pg/mL and 2.7 mmol/L

The histopathology revealed benign parathyroid adenoma. Patient was discharged home on day 10.

At outpatient's consultations on days 15 and 30, patient had good recovery and was self-caring. Serum calcium level was 1.63 mmol/L on day 30.

3. DISCUSSION

Severe hypercalcemia is a medical emergency, which may cause dehydration, cardiac arrhythmias and neuropsychiatric symptoms [3]. Hyperparathyroidism and Para neoplastic syndromes are two main causes [4]. A mediastinal parathyroid adenoma is present in less than 10% of all cases [2,4,5].

There is a small risk of rupture of these giant adenomas, causing major mediastinal bleeding and hematoma that might compress the trachea and consequently causes hypoxia [6].

Many treatment options have been described for parathyroid adenoma. Medical treatment only, ultrasound guided adenoma excision under local anaesthesia, minimally invasive parathyroidectomy under general anaesthesia or like in our case, thoracotomy and parathyroidectomy under general anaesthesia [7,8,9].

Our case presented two main challenges. First, the parathyroid adenoma was huge and was localised in the mediastinum causing respiratory symptoms that were treated as a chronic obstructive airway disease for a year. It is apparent the absence of a neck mass contributed in that diagnosis. It also misled practitioners at emergency department to treat patient as an acute respiratory distress.

On the other hand severe hypercalcemia occurred late in the development of that

adenoma. It was thanks to the ABG that this later was incidentally revealed on admission and helped pointing towards a diagnosis of parathyroid adenoma.

Once treatment of hypercalcemia had been initiated, patient's health improved. The CT scan confirmed the diagnosis and ruled out mediastinal trachea compression, which gave assurance about airway management during anaesthesia.

4. CONCLUSION

Parathyroid adenoma is a rare cause of respiratory distress. Presence of hypercalcemia on arterial blood gas test should prompt further investigation towards diagnosis of hyperparathyroidism and possibility of mediastinal parathyroid adenoma. CT scan or MRI inform about the whereabouts is the adenoma and guide best treatment approach.

CONSENT

All authors declare that written informed consent was obtained from the patient (or other approved parties) for publication of this paper and accompanying images.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Thomopoulos P, Luton JP, Richard B. Stratégie diagnostique et thérapeutique de l'hyperparathyroïdie primaire. *Rev Fr Endocrinol.* 1995;36:331-47.
2. Iyer RB, Withman GJ, Sahin AA. Parathyroid adenoma of the mediastinum. *Am J Roentgenol.* 1999;173:94.
3. Minisola S, Pepe J, Piemonte S, Cipriani C. The diagnosis and management of hypercalcaemia. *BMJ.* 2015;350:2723.
4. Roslyn JJ, Gordon HE, Mulder DG. Mediastinal parathyroid adenomas: A cause of persistent hyperparathyroidism. *Ann Surg.* 1983;49:523-27.

5. Doppman JL, Skarulis MC, Chen CC. Parathyroid adenomas in the aortpulmonary window. *Radiology*. 1996; 20:1456-62.
6. Cheng Zhao, Xiurong Wang, Hui Wei, Guifeng Ma. Parathyroid adenoma causing a spontaneous cervicaland mediastinal massive hematoma. *Int J Clin Exp Med*. 2015;8(11):21826-21829.
7. Noureldine SI, Gooi Z, Tufano RP. Minimally invasive parathyroid surgery. *Gland Surg*. 2015;4(5):410-9.
8. Saif A. Primary hyperparathyroidism presenting with acute pancreatitis and asymptomatic bone involvement. *Clin Cases Miner Bone Metab*. 2015;12(2): 199-201.
9. Sejean K, Calmus S, Durand-Zaleski I, Bonnichon P, Thomopoulos P, Cormie C, et al. Surgery versus medical follow-up in patients with asymptomatic primary hyperparathyroidism: A decision analysis. *Endocrinology*. 2005;153:915–927.

© 2017 Chekairi and Miguil; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<http://sciencedomain.org/review-history/19190>