A case report for Primary Hyperparathyroidsm in the elderly patient with complex issues

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DOI: 10.29322/IJSRP.10.10.2020.p10605
http://dx.doi.org/10.29322/IJSRP.10.10.2020.p10605

Background- Primary Hyperparathyroidism (PHPTH) can occur at any age but more common in postmenopausal women and men above 50. Primary treatment for PHPTH is surgery and NICE recommends referring cohorts with symptoms, or target organ damage or adjusted serum calcium ≥2.85mmol/L.

Index Terms- Primary hyperparathyroidism, comprehensive geriatric assessment

Abbreviation: PHPTH, primary hyperparathyroidism; PTH, parathyroid; CT, computerized tomogrphy; CGA, comprehensive geriatric assessment.

I. Case

A 75 years old gentleman was admitted with abdominal pain, vomiting and confusion.

He was diagnosed with PHPTH a year ago , listed for parathyroidectomy regarding refractory hypercalcemia. COVID-19 pandemic delayed his surgery. Clinically, he was dehydrated, emaciated with body weight of 44.85 kg and Clinical frailty score of 6.

His background was stroke and back pain.

His calcium was 3.86 mmol/l(ref: 2.2-2.6 mmol/L) and PTH was 67.9 pmol/ml (ref: 8-24 pmol/ml).Endocrinology advised intensive IV fluid followed by IV zolendronic acid aiming adjusted calcium level below 3.0 mmol/L. He was taken over by the geriatricians for deterioration in general and for developing complex issues: delirium secondary to urinary tract infection and hypercalcemia, urinary retention, low mood, poor nutrition and multiple falls. He described suicidal intent,being assessed by mental health team ,commencing mirtazapine. Regular dietitian's review suggested nasogastric (NG) feeding when weight loss by 5.5 kg was documented within 2 weeks. Unfortunately, he was not compliant with nasogastric tube despite appropriate measures. A repeat CT to look for secondary causes was unremarkable and TSH in this case was normal while CT scan identified a small thyroid nodule.

His calcium was still high (3.05 mmol/L) and again treated with zolendronic acid followed by cinacelet (calcinemetic agent) as per guideline. His oral intake and mobility were slowly improved altogether with delirium. His MMSE was 18/30, not having capacity , hence, the case conference was held and the MDT team decided to go ahead with surgery. The operation went well with post op D2 calcium 2.21 mmol/L.Histopathology results evidenced adenoma.

Finally, he was discharged to the respite after 75 days in hospital for rehabilitation and now mobilizing with a frame, gaining weight and improving cognitively.

II. Literature review

Primary hyperparathyroidism (PHPT) predominantly affects the elderly, with a peak incidence between ages 55 and 70. U.S. longitudinal population-based studies have found that women 65–74 years old have an annual detection rate of 99 cases per 100,000, compared with 15.7 per 100,000 in the general population (1).

With the passing of time, the diagnosis of primary hyperparathyroidism is increased because of the improved understanding of the characteristics of disease and routine screening of serum calcium .The presentations in the older age group might differ from general population where the mental disturbances may be the complaint in 50%. These may include slight or sever neuroersonality changes, principally depression, acute organic psychosis in most severe cases, or just lack of initiative in most cases. The diffuse psychiatric symptoms usually cannot be distinguished from other manifestations of aging (2)

Classical features of renal, musculoskeletal, gastrointestinal and psychiatric symptoms are commonly found in cases with rapidly increasing calcium level; however, asymptomatic in slowly increasing calcium level. In resource rich countries, over 85% of cases with PHPT are asymptomatic (3)

NICE NG[132],4th International workshop and American Association of endocrine surgeon recommends baseline investigations including serum Calcium, Parathyroid hormone level, tests to exclude familial hypocalciuric hypercalcemia , vitamin D level and target organ damage although the indications for specific tests slightly differ in each guidance. In suggesting parathyroid surgery, NICE recommended symptomatic patients, calcium level 2.85 mmol/l and above, osteoporosis (T score< -2.5) , fragility fracture and renal stone disease whereas 4th international workshop and American Association of endocrine surgeon covered wider inclusion criteria such as age <50, vertebral fracture (by X ray, CT, MRI or Vertebral fracture assessement), creatinine clearance<60,urinary calcium >10 mmol/L, nephrocalcinosis, renal stones , non traditional symptoms (reflux, fibromyalgia, neuropsychiatric, neuromuscular), patients unwilling to follow conservative monitoring protocol and Coronary artery disease.

American Association of Endocrine surgeon advised parathyroid surgery is more cost effective than conservative or medical treatment. Cervical ultrasound or other high intensity imaging is recommended preoperatively. Clinically relevant

thyroid disease should be assessed preoperatively and should be managed during operation. Cure defined as eucalcemia at more than 6 months.

Comprehensive Geriatric Assessment (CGA) is a process of care including a multidimensional holistic assessment of an older person, formulation of a plan to address issues concerning the person addressed (and their family and carers when relevant). Interventions are carried out, progress is reviewed and the original plan reassessed at appropriate intervals with the modified interventions to customize the individual.

Evidence shows that CGA is effective in reducing mortality and improving independence, hospital admission and impact of frailty (5)

III. Discussion

In our case; diagnosis and treatment plan was ascertained,however, the new complex issues directly or indirectly related to the primary disease made the surgery deemed unfit. Comprehensive geriatric assessment helps identifying the problems to optimize the preoperative conditions. Although surgery might be straightforward in the younger population, the older people with frailty issues are more succumb to deterioration and holistic care on individual needs matter the most.

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