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A prospective study on variations in serum calcium levels after thyroidectomy in benign and malignant thyroid diseases in indian population

Dr.G.Raj Ashok M.S.,[1] ,Dr.P.Sumathi M.S., D.G.O.,[2],
[1](Government Mohan KumaramangalamMedical College Hospital,Salem,TamilNadu,India)
[2](Government Mohan KumaramangalamMedical College Hospital,Salem,TamilNadu,India)
Corresponding Author – Dr.G.RAJ ASHOK M.S[1]

Abstract :
BACKGROUND:
Post-operative hypocalcemia is a common event after extensive thyroid surgery. It can be transient or permanent. It can symptomatic or asymptomatic.symptomatic patients can present with mild or severe symptoms accordinlg to which correction of serum calcium levels may be required.
AIMS:
Our study is to evaluate the incidence of hypocalcemia after total thyroidectomy,to analyse the severity of presentation and to study about various modalities of treatment available.
METHODS:
The study was carried out in 50 patients (42 females and 8 males, whose age was between 20 and 65 years, who had undergone total thyroidectomy (TT) in our department from 2016 to 2018
RESULTS:
Post-operative hypocalcemia was observed in 20 patients and the decrease of the serum calcium level lasted about 3 days, and went back to normal within the 5th day. Of those 20 patients , 5 patients had mild symptoms ,others were asymptomatic.In 2 patients out of the 50 who underwent total thyroidectomy, hypocalcemia was severe (confirmed for more than 7 days, symptomatic),both of them underwent total thyroidectomy with neck nodal dissection. In both cases the clinical and biological aspects went back to normal within 10 days, after a treatment with calcium and vitamin D.
CONCLUSION:
The results obtained confirm that transient hypocalcemia is a common feature in post thyroidectomy patients. Of those asymptomatic hypocalcemia is common. We found that post-operative hypocalcemia may be due to transient parathyroid gland ischemia or handling during surgery or accidental to injury to the parathyroid glands (parathyroid ischaemia or surgical ablation of one or more glands.The results of our study, show that radical thyroid surgeries with central neck node dissection can lead to inadvertent injury of parathyroids that may result in transient mild or prolonged severe hypoparathyroidism and hence hypocalcemia . Surgeries done under meticulous care can avoid such problems.

Keywords. Hypocalcemia,Parathyroid,Thyroid,vitamin D,

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I. Introduction:

Post thyroidectomy transient hypoparathyoidism causing hypocalcemia is the commonest complication of such surgeries. But the presentation and incis=dence is highly variable. Some people have a exaggerated response and while some others have a minimal response to changes in serum calcium levels. A statistical data can give a picture of the burden of the complications and its incidence and the type of managements that a surgeon can plan for.

II. Objectives:

Our aim is to list out the incidence of serum calcium level changes in a group of patients undergoing total thyroidectomy and to try to arrive at a conclusion based on the same.

METHODS

The study was carried out in 50 patients (42 females and 8 males, whose age was between 20 and 65 years, who had undergone total thyroidectomy (TT) in our department from 2016 to 2018 . Proper ethical clearance and informed consent was obtained.

III. Results:

Table 1 Characteristics of the sample (N = 50)

Gender	
Male	8
Female	42
Age at the time of surgery	
20-29 years	7
20-39 years	18
40-49 years	17
50-59 years	8
Total	50
Indication of surgery	
Benign disease	48
Malignant disease	2
Total	50
Graves' disease	-
Thyroiditis	4
Cancer histologic type	
Follicular carcinoma	2
Papillary carcinoma	-
Medullary carcinoma	-
Hypoparathyroidism symptoms	
Absence	43
Presence	7

Post operative hypocalcemia	20
Mild symptoms	5
Severe symptoms	2

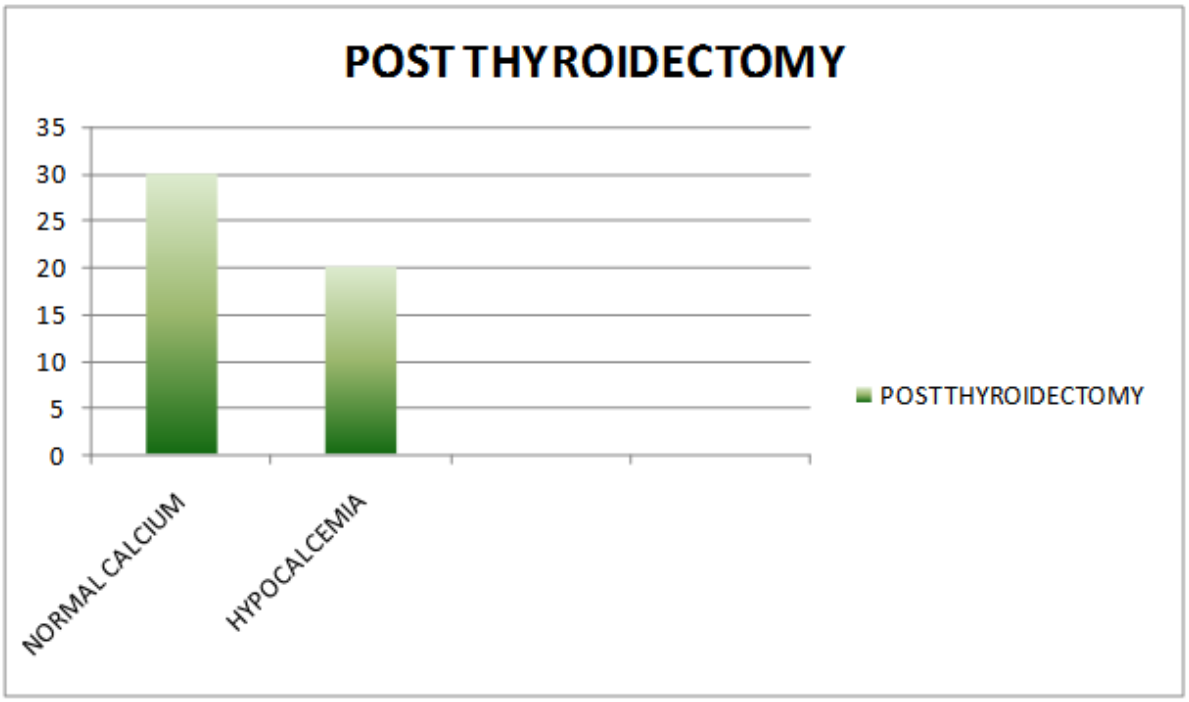

FIG 1 NORMAL CALCIUM AND HYPOCALCEMIA

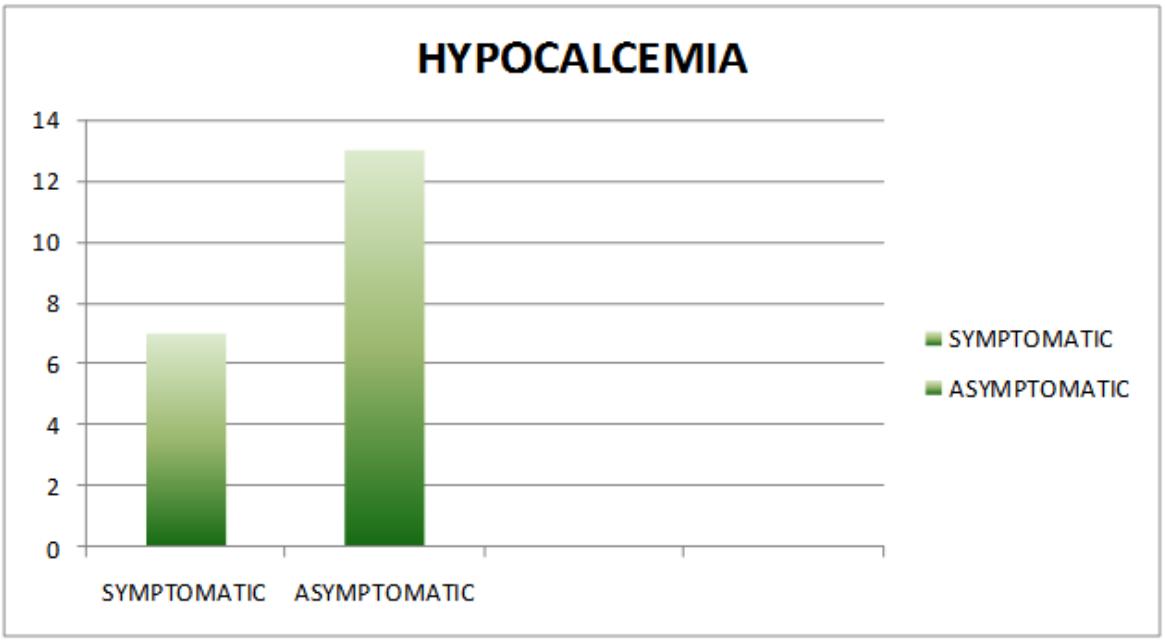

FIG 2 SYMPTOMATIC VS ASYMPTOMATIC HYPOCALCEMIA

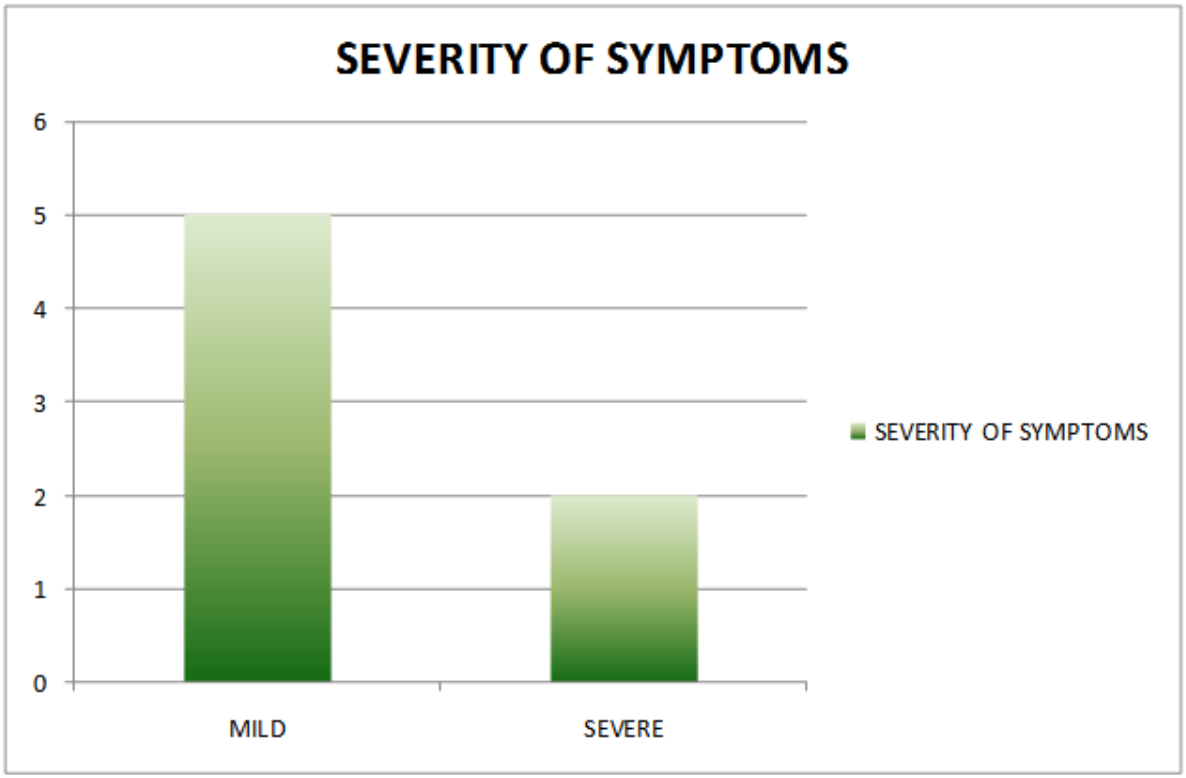

FIG 3 MILD VS SEVERE SYMPTOMS OF HYPOCALCEMIA

IV. Discussion:

Total thyroidectomy procedures carry the risk of post-operative hypocalcemia.Hypocalcaemia can result in patients suffering a variety of signs and symptoms, the severity of which usually correlates with the magnitude and rate of the fall. In light of this, thyroidectomy patients are at greater risk of becoming symptomatic as they may have been previously hypercalcaemic for several months and calcium levels may begin to decline immediately after surgery and continue to do so for several days before stabilising. Common symptoms patients may experience include paraesthesia and tingling, particularly around the mouth and in the fingers and toes, and also muscle spasms and cramps. Lower levels of calcium are associated with more serious signs and can result in seizures, bronchospasm, laryngospasm, and a prolonged QT interval which may progress to cardiac arrhythmia's such as ventricular fibrillation or heart block.

Post-surgery hypocalcemia is caused by an inadequate secretion of parathormone (PTH) by the parathyroids glands. Transitory hypoparathyroidism is the most frequent complication following total thyroidectomy and occurs in 16.5 to 71% of patients. This large range in the incidence of hypoparathyroidism in the literature is explained by the heterogeneity of its diagnosis in existing studies; only clinical or a combination of clinical and laboratory diagnostic techniques have been used. Permanent hypoparathyroidism is less frequent following total thyroidectomy, with an incidence of 1.5 to 1.8%. therefore post operative hypocalcemia with mild symptoms is not an alarming problem. But the patients need monitoring if they develop severe symptoms and paratharmone levels need to be measured.

V. Conclusion:

The results obtained confirm that transient hypocalcemia is a common feature in post thyroidectomy patients. Of those asymptomatic hypocalcemia is common. We found that post-operative hypocalcemia may be due to transient parathyroid gland ischemia or handling during surgery or accidental to injury to the parathyroid glands (parathyroid ischaemia or surgical ablation of one or more glands.The results of our study, show that radical thyroid surgeries with central neck node dissection can lead to inadvertent injury of parathyroids that may result in transient mild or prolonged severe hypoparathyroidism and hence hypocalcemia . Surgeries done under meticulous care can avoid such problems.

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