Audit Report of Compliance of Thyroid Stimulating Hormone Test before Anti-PD1/PDL1 Checkpoint Inhibitors in a Single Institution

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Introduction and Objectives

The use of anti-PD1/PDL1 checkpoint inhibitors has become popular in many treatments of solid tumours as adjuvant and palliative therapies. Endocrinopathy is one of the major side effects.

For instance, routine TSH check is recommended by ESMO guideline[1] to detect early hypothyroidism, hyperthyroidism or pituitary gland failure, and to facilitate early treatment. Reported literature suggested nearly 20% of patients receiving anti-PD-1 antibodies present with thyroid dysfunction[2].

The primary objective of this audit project is to evaluate the compliance rates of TSH check before use of anti-PD1/PDL1 checkpoint inhibitors among clinical oncologists in the Department.

The secondary objective is to evaluate the effectiveness of remedial actions on subsequent rounds of audits.

The cross-sectional rate of thyroid dysfunction in these patients In the third round of audit will also be reported

Methods

TSH should be checked before every cycle of anti-PD1/PDL1 therapy for the first 3 months, then TSH should be checked in alternative cycles thereafter. Any abnormal TSH level should be investigated accordingly.

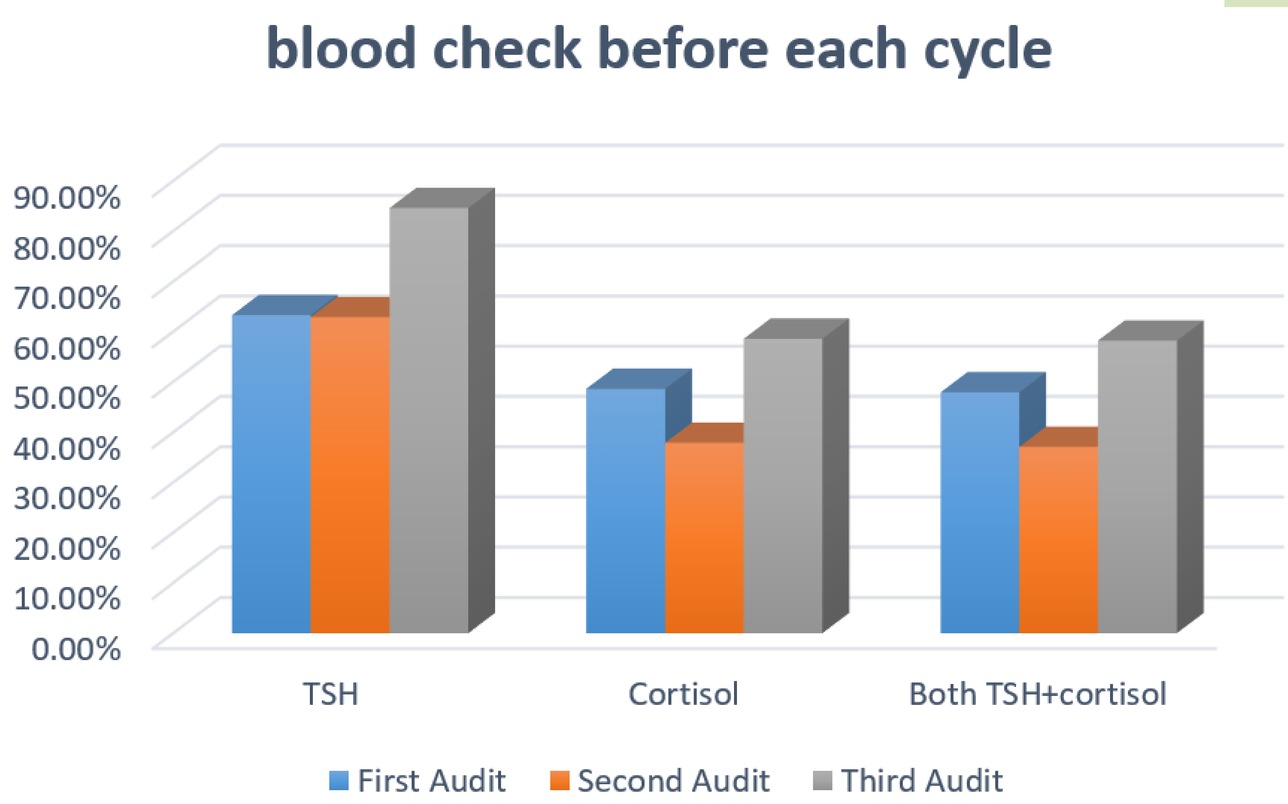
Three rounds of audit had been performed. Eligible anti-PD1/PDL1 therapies for audit included any one of Pembrolizumab, Nivolumab, Atezolizumab, Avelumab or Durvalumab

In each round of audit, a two-months record of all out-patient visits in the chemotherapy clinics was retrospectively reviewed. All eligible patient-visits would be retrospective reviewed to see if TSH test was checked before the prescription of anti-PD1/PDL1 therapies.

Remedial actions had been attempted to improve compliance rate of second and third rounds of audit. Chi Square test was used to detect any difference in compliance rate. a $p<0.05$ was defined as statistically significant.

Table 1. percentage of TSH and cortisol check before each cycle of therapy

	First Audit 5-6/2019	Second Audit 9-10/2019	Third Audit 3-4/2020	
	N=259	N=259	N=273	P value
TSH	**164 (63.3%)**	**176 (62.9%)**	**231 (84.6%)**	**<0.001**
Cortisol	126 (48.6%)	106 (37.9%)	160 (58.6%)	<0.001
TSH+cortisol	124 (47.9%)	104 (37.1%)	158 (58.2%)	<0.001



Results

The first round of audit included data from May to June in 2019. 256 eligible patient-visits (with using anti-PD1/PDL1 checkpoint inhibitors) were identified. **161** of them had TSH test performed. Compliance rate was **63.3%.**

After the first audit, a presentation of this audit had been presented in a department meeting. An email was also sent to all clinicians in the Department as a reminder.

The second round included data from September to October in 2019, 280 eligible patient-visits were identified. Compliance rate was **62.9% (176 patient-visits).** There was no improvement from first round.

Announcement of result and discussion were made in the Department's WhatsApp group. Special blue-colored stamps with **"Thyroid Function Test before each cycle"** printed were made. Stamps were put on all master sheets of patients receiving anti-PD1/PDL1 therapies. (see picture below)

The third round included data from March to April in 2020, 273 eligible patient-visits were identified. Compliance rate was **84.6% (231 patient-visits) with p< 0.001**.

32 (11.7%) patients in the third round were found to have abnormal TSH, which is lower than the expected rate of 20%

Conclusions

Compliance rates of TSH check before check point inhibitors were high and can be improved easily with digital and on-paper reminders.

The incidence of abnormal TSH was found to be lower than that of literature

References

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