

INPLASY PROTOCOL

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Conflicts of interest:
None declared.

INTRODUCTION

Review question / Objective: P:Subclinical Hypothyroidism(Age over 18); I:thyroid hormone replacement therapy; C:baseline(before-after study in the same

A meta-analysis of Effect of thyroid hormone replacement therapy on the Cardiac diastolic function in Patients with Subclinical Hypothyroidism

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Review question / Objective: P:Subclinical Hypothyroidism(Age over 18); I:thyroid hormone replacement therapy; C:baseline(before-after study in the same patient); O:Cardiac diastolic function measurement by echocardiography.

Condition being studied: Subclinical hypothyroidism is associated with anomalies left ventricular diastolic functions, however, there are still disputes about whether to use levothyroxine for treatment. This meta-analysis aimed to determine whether levothyroxine (LT4), commonly used to treat hypothyroidism, affects cardiovascular indices in SCH patients as measured by echocardiography.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 19 February 2023 and was last updated on 19 February 2023 (registration number INPLASY202320083).

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METHODS

Search strategy:

("hypothyroidism"[MeSH] OR "hypothyroidism"[Title/Abstract] OR "thyroid deficiency"[Title/Abstract] OR "thyroid insufficiency"[Title/Abstract]) AND ("thyroid hormones"[MeSH] OR "thyroid hormone"[Title/Abstract] OR "Levothyroxine"[Title/Abstract] OR "Levothyroid"[Title/Abstract] OR "Levothyroxine"[Title/Abstract] OR "Eltroxine"[Title/Abstract] OR "Euthyrox"[Title/Abstract] OR "Eutirox"[Title/Abstract] OR "thyronin"[Title/Abstract] OR "thyroxin"[Title/Abstract] OR "tyroxin"[Title/Abstract] OR "L-T3"[Title/Abstract] OR "L-T4"[Title/Abstract] OR "FT3"[Title/Abstract] OR "FT4"[Title/Abstract] OR "t3 hormone"[Title/Abstract] OR "t4 hormone"[Title/Abstract] OR "T3"[Title/Abstract] OR "T4"[Title/Abstract] OR "substitution therapy"[Title/Abstract]) AND ("Echocardiography"[MeSH Terms] OR "stroke volume"[MeSH] OR "ventricular function"[MeSH] OR "diastole"[MeSH] OR "atrial remodeling"[MeSH] OR "Echocardiography"[Title/Abstract] OR "ventricular remodeling"[Title/Abstract] OR "cardiac remodeling"[Title/Abstract] OR "cardiac adaptation"[Title/Abstract] OR "left ventricular geometry"[Title/Abstract] OR "left ventricular geometry"[Title/Abstract] OR "cardiac geometry"[Title/Abstract] OR "cardiac dimension"[Title/Abstract] OR "left ventricular function"[Title/Abstract] OR "systolic function"[Title/Abstract] OR "ejection fraction"[Title/Abstract] OR "diastolic function"[Title/Abstract] OR "atrial remodeling"[Title/Abstract] OR "strain"[Title/Abstract]) .

Participant or population: Patients with Subclinical Hypothyroidism, aged above 18y.

Intervention: levothyroxine, elevated serum thyrotropin should returned to normal after treatment.

Comparator: Baseline indicators before therapy.

Study designs to be included: Self-control study.

Eligibility criteria: Subjects were included who was taking medications related to thyroid dysfunction . Second, subjects with comorbidities that could affect cardiac metrics were enrolled. Language was restricted to English. In addition, reviews, letters to the editor, case reports or case series without follow up were also excluded.

Information sources: PubMed, EMBASE, Cochrane Library, and Web of Science.

Main outcome(s): Cardiac function was reviewed in three categories: Cardiac morphology, diastolic function and, ventricular strain.

Quality assessment / Risk of bias analysis: The Newcastle–Ottawa Scale.

Strategy of data synthesis: If I² > 25%, a random-effects model was applied. If I² < 25%, a fixed-effects model was adopted.

Subgroup analysis: No.

Sensitivity analysis: Sensitivity analysis was conducted by the sequential removal of each study.

Language restriction: English.

Country(ies) involved: China (Department of Geriatrics, The First Hospital of Lanzhou University).

Keywords: Subclinical hypothyroidism; diastolic function; thyroid hormone replacement; meta-analysis.

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