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Original article:

A Clinicopathological Study of Thyroid Swellings at Rural Tertiary Care Hospital

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Abstract

Introduction: In this study, much emphasis is placed on the clinical presentation of thyroid swellings and the role of pathological investigations in the management of thyroid swellings. The incidence of thyroid diseases are increasing in recent years due to goitrogens and changing food habits.Diseases of thyroid gland, especially multinodular goiter due to deficiency of iodine is prevalent in India.

Material and Methods: A prospective study conducted on patients attending the E N T outpatient department of Rural Tertiary Care Hospital, from June 2018-December 2020.Patients with neck swellings between the age group of 11 -70 years were in the inclusion criteria. After detailed history thorough, clinical examination was carried out all the patients underwent routine investigations TFT FNAC USG neck. Patients underwent surgery and all the thyroid specimens were sent for HPE and the clinical diagnosis is correlated with that of pathological diagnosis.

Results: A total number of 50 patients with neck swelling were evaluated.The incidence most common in 41-50years, and most prevalent among females 84%,males being 16%most common clinical feature being anterior neck swelling followed by fatigue, dysphagia, palpitation, pain, dyspnoea, hoarseness of voice,tremors,weight gain ,duration ranged from 1 week to 3 years.Most common FNAC finding being colloid goitre.

Conclusion: The present study was undertaken to evaluate the usefulness of clinical examination,FNAC and USG of thyroid in management of thyroid swellings and compare the efficacy of each investigation.

Keywords: Thyroid, goiter, USG, FNAC,TFT ,HPE benign lesion, malignancy

Introduction:

The term thyroid gland is attributed Thomas Wharton in 1645.[1] Thyroid gland is unique among endocrine organs as it is the largest endocrine gland in the body and the first to develop in foetal life Classic anatomic descriptions of the gland were available in the 16th and 17th century, but the function of the gland was not described. In 19th century pathological enlargement of the thyroid gland, or goiter was described.[2] Normal thyroid gland is impalpable. The term goiter (Latin, guttur = the throat) is used to describe generalised enlargement of the thyroid gland. Enlargement of thyroid gland is the most common manifestation of thyroid disease. The enlargement may be either generalized or localized. Which again may be toxic or nontoxic. The nontoxic goiter is further divided on etiological basis as endemic goiter and sporadic goiter. The endemic goiter is defined as one where more than 10% of population shows thyroid enlargement[3]. Lesion of thyroid are predominantly confined to females in the ratio of 5:1. And this has been attributed to variation of thyroid

hormones during female reproductive function and physiological events such as puberty, pregnancy and lactation.

Thyroid swellings are very superficial, easily visible and display an intriguing range of lesions widely differing in biological behaviour and are source of concern for the patient and a diagnostic dilemma for physicians.[4] FNAC is a well-accepted and established OPD procedure used in the primary diagnosis of palpable thyroid swelling with high sensitivity and specificity

A thyroid enlargement whether diffuses or in the form of a nodule has to be investigated to rule out neoplasm. FNAC is the first line of investigation and others like ultrasound, thyroid function test, thyroid scan and antibody levels are done subsequently with an aim to select who require surgery and those that can be managed conservatively. The limitations of cytology are well recognized in the diagnosis of some thyroid malignancies, in particular is not able to differentiate between follicular adenoma and carcinoma and also in the detection of some papillary carcinomas because of associated thyroid pathologies including MNG thyrotoxicosis and marked cystic changes.[5] Thus, even if non-surgical and non-invasive techniques can provide a diagnosis, the ultimate answer rests in the histopathological examination of the excised thyroid tissue.

The reasons for wide spread use of sonography are availability, low cost, less discomfort, and non-ionizing nature.[6,7]FNAC has been become established as a choice of investigation in thyroid swelling. It has excellent patient compliance, is simple and quick to perform in outpatient department and is readily repeated.[8] Ultrasound guided FNAC has improved diagnostic accuracy compared to the FNAC by palpation.[9]The aim of the study is to study the clinical presentation of thyroid swellings, incidence of various thyroid swelling, benign versus malignant lesion and to correlate the clinical diagnosis with that of pathological diagnosis in various thyroid diseases in Rural Tertiary Care Hospital

Aims and Objectives

1. The objective of this study is to determine the overall incidence and clinical analysis of thyroid swellings with some emphasis on geographical distribution
2. The age and sex distribution along with frequency of occurrence of different variants of thyroid swellings
3. To evaluate the results of thyroid FNAC ,USG and correlate with histopathological results

Material and Methods:

This is a prospective hospital-based study carried out on 50 cases of thyroid swelling attending the department of ENT in Rural Tertiary Care Hospital during the period of June 2018 to December 2020 after approval from institutional ethics committee.

Inclusion criteria :

Patients with thyroid swelling, who are fit to undergo thyroid surgery, and willing to give consent to participate in the study.

Exclusion criteria :

Patients with recurrent thyroid swelling

Patients with pubertal thyroid enlargement, hypothyroid or hyperthyroid patients, and patients unfit for surgery due to medical reasons.

The principle investigator thoroughly examined all cases at the ENT department by taking a detailed history, general examination along with a system based otorhinolaryngological assessment. After clinical assessment, thyroid status was determined by estimation of T3, T4, TSH. FNAC, USG NECK was done. Complete

hematological investigations were done. 50 patients of thyroid swelling were evaluated and the main outcome measures were the clinicopathology and sonological correlates. All the subjects were explained about the purpose of the study and were ensured that the information collected from them would be kept confidential and would be used only for academic purpose. Then written informed consent was taken from each subject. Other non-invasive procedure like X-ray chest PA view and soft tissue X-ray neck lateral view was taken to see any calcification or deviation of trachea and retrosternal extension. Preoperative indirect laryngoscopy or 70-degree endoscopy was done in all cases. CT scan of neck and thorax done only if necessary for retrosternal extension and metastasis, thyroid isotope scan was done only if required.

During operation all operative findings were recorded meticulously and carefully, including macroscopic finding, visualization and isolation of parathyroid glands and recurrent laryngeal nerve, status of draining lymph nodes. All specimens were sent for histopathological study for a confirmed diagnosis. In the postoperative period all the patients were examined for any postoperative complications of immediate and delayed in nature and routinely before discharge, indirect laryngoscopy was done to see the vocal cord movement and their position.

The patients were followed up on OPD basis for histopathological report. The collected data were entered in MS Excel and analysed in SPSS V22,statistics was used to find Significant agreement between FNAC and postop HPE to determine benign and malignant lesions

OBSERVATIONS AND RESULTS

Table 1: Age and Sex Distribution of Patients (n=50)

Age	Male	Female	Percentage %
11-20	00	1	2
21-30	02	9	22
31-40	02	11	26
41-50	02	14	32
51-60	01	04	10
61-70	01	03	08
Total	08	42	100

Table 2. Geographical and Community distribution of case (n=50)

Residence	**Male**	**Female**	**Percentage**
Urban	**03**	**12**	**30**
Rural	**05**	**30**	**70**
Total	**08**	**42**	**100**

Table 3: clinical features

CLINICAL FEATURES	NUMBER OF PATIENTS(n=50)
NECK MASS	50(100%)
PAIN OVER THE MASS	7 (14%)
DYSPNOEA	6 (12%)
DYSPHAGIA	11 (22%)
HOARSENESS OF VOICE	5 (10%)
WEIGHT LOSS	5 (10%)
WEIGHT GAIN	6 (12%)
PALPITATIONS	10 (20%)
TREMORS	4 (8%)
FATIGUE	20(40%)
CONSTIPATION	2 (4%)
MENSTRUAL IRREGULARITIES	5 (10%)

Table 4: Duration of Complaints (n=50)

SI. No.	Duration of complaints	No. of cases
1	Less than 6 months	16
2	6 months – 3 years	22
3	> 3years	12

Table 4. USG findings in thyroid lesions.

SI. No.	USG findings	Number of cases (n=50)	Percentage
1	Colloid nodule	18	36
2	Multinodular goiter	14	28
3	Thyroiditis	2	4
5	Solitary Thyroid nodule	4	8
6	Thyroid Cyst	4	8
7	Neoplasm	8	16

Table 5 : Distribution of lesions on FNAC

SI.No.	Classification	FNAC lesions	
		Category	No
1	Benign (n=34)	Colloid goiter	18
		Nodular goiter	10
		Benign cystic lesion	4
		Thyroiditis	2
2	Suspicious (n=10)	Follicular neoplasia	10
3	Malignant (n=6)	Carcinoma	6

Table 6. Results of histopathological diagnosis

SI. No.	Histopathological diagnosis	N0 (n=50)
1	Colloid Goiter	18
2	Nodular goiter	8
3	Hashimoto's thyroiditis	2
5	Benign follicular adenoma	10
6	Colloid cyst	4
7	Carcinoma	
	Papillary	5
	Follicular	2
	Medullary	1

Discussion:

In the present study age of the patient ranged from 11-70 years . The number of males in the present study was 8(16%), and the females were 42(84%) with a male to female ratio of 1:5. Psarras[10] given high preponderance of female similarly with 7:1 and Kusum et al[11] with the female:male ratio of 5:1 respectively . In our study majority of patients were from Rural region 70% The patients with thyroid swellings commonly present with symptoms like swelling in anterior part of neck, pain in the swelling, sometimes with dysphagia or hoarseness of voice, heat or cold intolerance, palpitations.

The commonest clinical presentation was the presence of swelling in front of the neck few of the patients presented with dyspnoea (6%) and hoarseness of voice (5%). In study conducted by Kusum et al thyroid swelling was in 100% cases[11] and Godinho-Matos L et al, the thyroid swelling was present in 100% cases, dyspnoea in 3% cases and hoarseness of voice in 3% cases[12] and majority presented between 6 months to 3 years. USG is used to establish physical characteristics like size, shape and number of nodules [13].

The ultrasonographic findings help in distinguishing whether the thyroid swelling is benign or malignant, by providing information about the nodularity, vascularity, calcification and extension of thyroid swelling. A high suspicion in needed to identify malignant swellings.

In our study colloid goitre 18 cases (36%) was the most common finding on USG followed by multinodular goitre 14 cases (28%). Similarly study conducted by Gupta et al[12], multinodular goitre (55%) was the most common ultrasonographic finding followed by solitary thyroid nodule (19%) . In our study most common lesions were non neoplastic 42 (84%) and remaining were neoplastic 08(16%) with non-neoplastic to al neoplastic ratio of 5:1. Similar findings reported by other authors Magdalene et al[14] and Abdul Gafoor et al[15].

In our study sensitivity of USG was 60% It has been a consistent observation according to published literature, that the risk of thyroid cancer is less with multiple nodules than with the solitary nodules.

Diagnostic strategy using initial fine needle aspiration biopsy for palpable thyroid nodule easy found to be safe and cost effective.[16]

FNAC study of 50cases, Non-neoplastic lesions were 34,Suspicious cases were 10 and Neoplastic were 6 cases, in neo-neoplastic lesions the most common were colloid goiter 18 cases, followed by nodular that is 10 cases,followed by cystic 4 cases and 2 cases of thyroiditis were found. In Neoplastic lesions, papillary carcinoma was the most common . According to Kaplan, the incidence of FNAC is as follows 65% colloidal goitre, 2% benign thyroid lesion. 5% malignancy, 10% non-diagnostic.

In a study by Rout et al, FNAC results showed that colloid goiter was also the most common among thyroid swelling (42.2%) followed by thyroglossal cyst (19.7%), colloid goiter with cystic degeneration (13.2%), Hashimoto's thyroiditis (10.6%), follicular adenoma (7.8%) and papillary carcinoma (6.5%)[17].

FNAC has certain limitations because of suspicious diagnosis. In present series, 10 cases were found to be suspicious, out of which 2 were found to be malignant on final histopathology examination. Thus, an overall malignant rate of about 20% for the suspicious group was found. Because of this high incidence of malignancy in suspicious lesions, surgical removal of these swellings should be strongly considered in these cases.

In spite of its shortcomings, FNAC has an important role in evaluation of patients with thyroid swellings. According to Borgohain et al[18] FNAC is a simple, safe and cost-effective diagnostic modality. The procedure has a central role in the management of thyroid nodules and should be used as the initial diagnostic test. According to them, a benign or inconclusive FNAC result should be viewed with caution as false negative results do occur and these patients should be followed up and any clinical suspicion of malignancy even in the presence of benign FNAC requires surgery. So, final diagnosis and treatment pattern should be based upon histopathology[18]

In our study 50 cases under went surgical intervention in which most were females. Final histopathological analysis of the surgical specimens showed that 18 (36%) cases had features suggestive of colloid goitre, 8 cases(16%) of nodular colloid goitre , Hashimoto's thyroiditis 2 case(4%),Colloid Cyst 4 (8%),Follicular adenoma 10(20%) cases.16% of total cases consisted of thyroid carcinoma of which papillary carcinoma was

most common 5 (10%) along with 2 cases (4%) of follicular carcinoma and 1case (2%) of medullary carcinoma . In another study performed by Gupta et al[19] in the histopathological examination of excised specimens showed 42 (56%) cases as colloid nodular goitre which is less than our figure. Other pathologies found in that study included 12 cases (16%) of follicular adenoma, 12 cases (16%) of papillary carcinoma, 3 cases (4%) of Hurthle cell adenoma etc.

In our study of 8 cases of thyroid neoplasms, 2 cases were follicular neoplasm, 5cases were Papillary carcinoma and 1 was medullary carcinoma.

Among the suspicious cases 8 cases were Follicular Adenoma histopathologicaly, In our study among 8 cases of Neoplasm 6 cases had similar diagnosis on FNAC, and 2 cases were diagnosed as neoplastic on biopsy. In our study 5 cases of Papillary carcinoma on FNAC were confirmed histopathologicaly with the accuracy of 100% which is similar to most of the studies. Among non-neoplastic lesions, colloid goitre was the most common lesion 18 cases (36%) followed nodular goitre 08cases (16%). Magdalene et al noted colloid goiter (42%) was the most common lesion in their studies. Among neoplastic cases follicular adenoma 10 cases (20%) was the most common lesion followed by 2 cases of Follicular carcinoma, 5 cases of Papillary carcinoma and 1 case of Medullary carcinoma. Similar results were noted by Abdul Gafoor et al[15] and Gupta et al[19]. Overall benign lesion were more common than malignant lesions and findings of present study correlate with other study. As our centre is rural tertiary care centre, very few patients of malignancy are reported. Because most patients are referred to higher centre, the incidence of papillary carcinoma, medullary carcinoma and follicular carcinoma are less. Also there is high illiteracy, lack of knowledge and importance about health problems the patients ignore the symptoms of disease and present late to the institute. This maybe the reason for lower incidence of malignant lesions and mostly non neoplastic lesions in present study.

In our study no complication were seen except one case having hypocalcemia and one case having unilateral vocal cord palsy. The sensitivity, specificity, and accuracy of FNAC for malignancy detection have eclipsed the diagnostic utility of other diagnostic methods and this procedure has assumed a dominant role in determining the managements of patients with thyroid swellings .

Conclusion:

All malignant lesions on FNAC, were confirmed by histopathology indicating its excellence. Therefore FNAC helps in planning the correct management and avoids second surgery.

.Therefore a combination of both FNAC and Ultrasound will give optimal results and avoid mismanagement .All solitary thyroid nodules with euthyroid needs surgery and minimal surgery is Hemi-thyroidectomy. This was undertaken in all cases, which help in establishing the histopathological diagnosis and in comparing the efficacy of above investigations.

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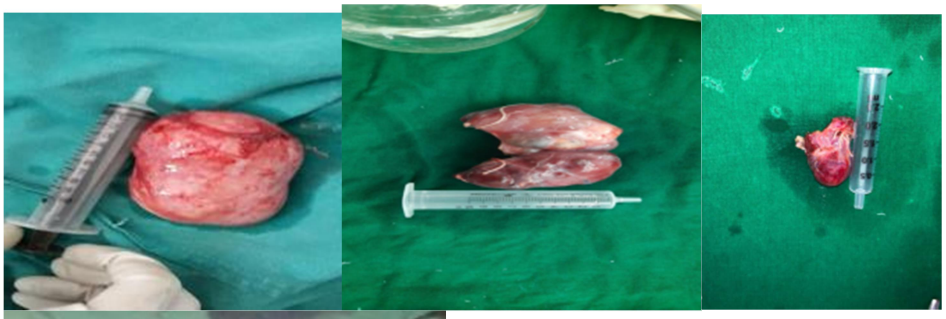
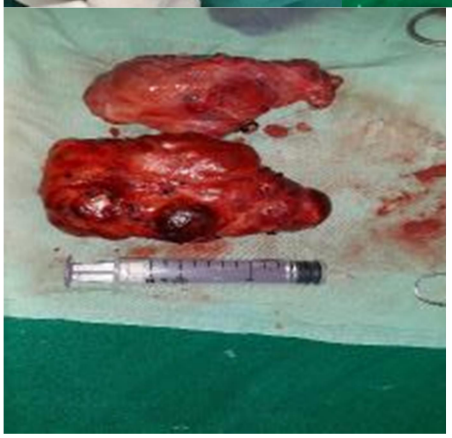
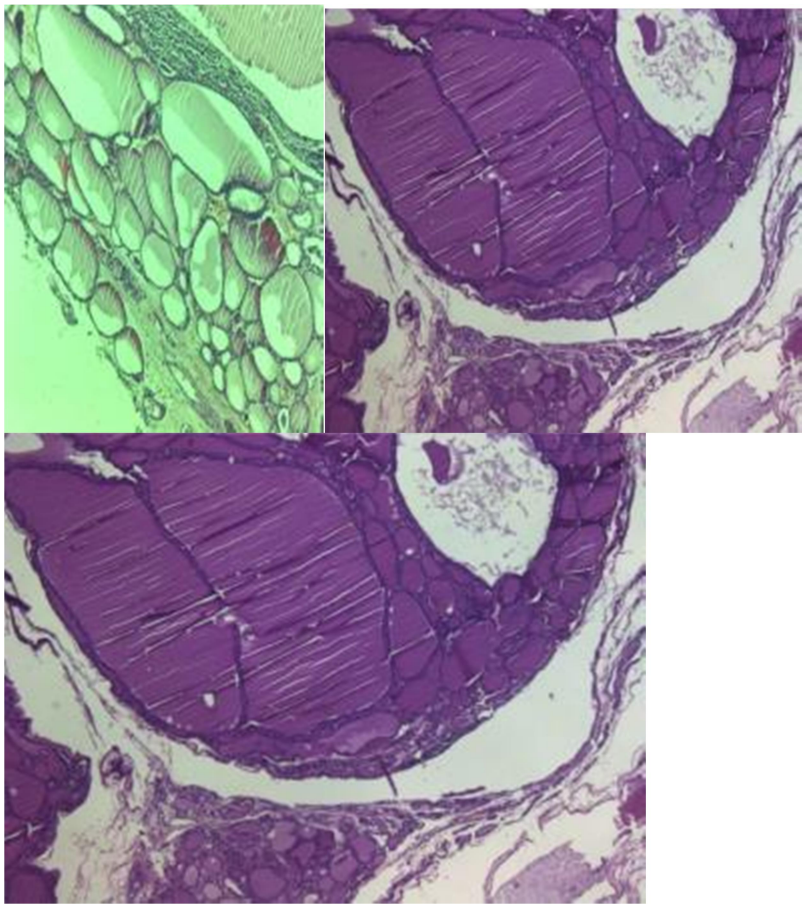
1. Thyroid Neck Swellings

2.Histopath Specimens of Thyroid

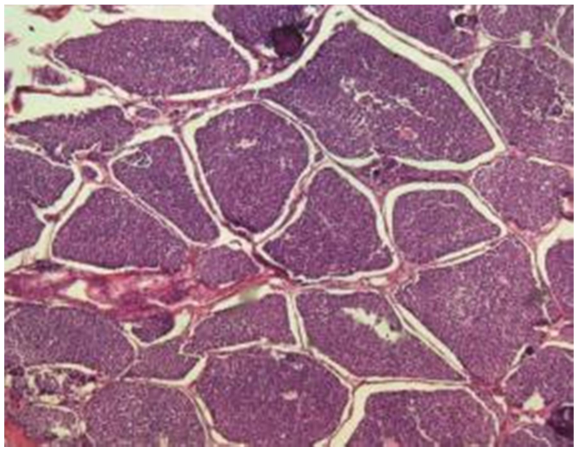




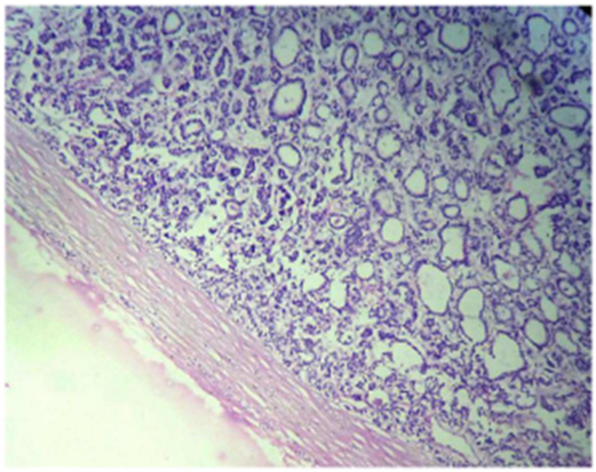
3. Histopath Examination Slides



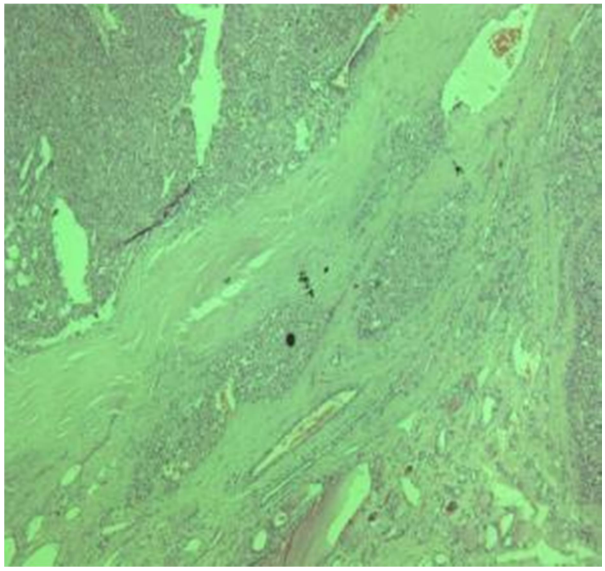
A. Colloid Goiter



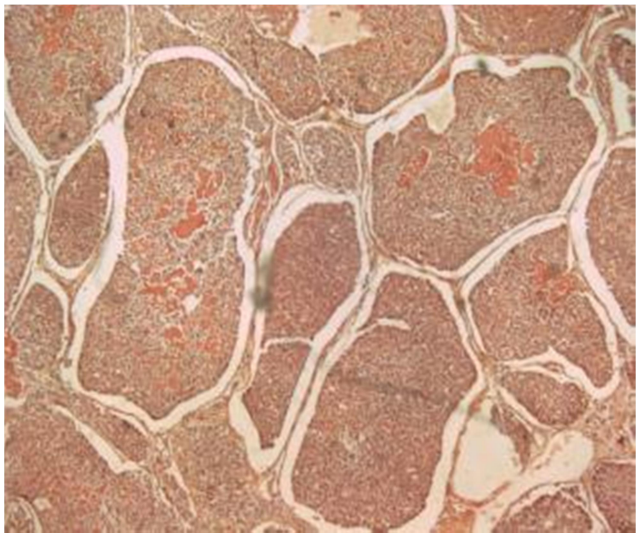
B. Hashimoto's Thyroiditis



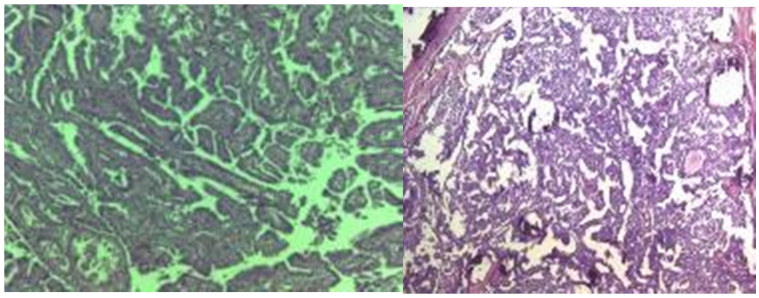
C. Follicular Adenoma



D. Follicular Carcinoma



E. Medullary Carcinoma



F. Papillary Carcinoma

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For any images presented appropriate consent has been obtained from the subjects: NA
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