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CASE REPORT

PRIMARY PEDIATRIC PAROTID FOLLICULAR LYMPHOMA WITH MARGINAL ZONE DIFFERENTIATION: A CASE REPORT

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Abstract

Introduction. Pediatric type follicular lymphoma (PTFL) is a rare, indolent B-cell lymphoproliferative disorder. While it predominantly presents as nodal head and neck disease in adolescent males, primary extranodal involvement of major salivary glands, particularly the parotid gland, is extraordinarily rare and presents significant diagnostic challenges on routine head and neck imaging.

Case presentation. We report the case of a 15-year-old male presenting with a painless, slowly enlarging right parotid mass. The initial high-resolution B-mode ultrasonography demonstrated a well-circumscribed, homogeneously hypoechoic intra-parotid mass (2 x 3 cm), without destructive parenchymal invasion or overt vascular dysmorphism. Laboratory markers (LDH, ferritin, uric acid) were within normal limits. Histopathology and immunophenotypic profiling confirmed PTFL with marginal zone differentiation (CD20 +, CD10+, high Ki-67 ~90%, and characteristic Bcl-2 –/ Cyclin D1 –). Multi-modality staging was performed: staging computed tomography (CT) of the neck, chest, abdomen, and pelvis confirmed localized

Résumé

Lymphome folliculaire parotidien pédiatrique primitif avec différenciation de la zone marginale: rapport du cas

Introduction. Le lymphome folliculaire de type pédiatrique (LFTP) est une maladie lymphoproliférative B rare et indolent. Bien qu'il se manifeste principalement par une atteinte ganglionnaire cervico-faciale chez les adolescents de sexe masculin, l'atteinte extraganglionnaire primitive des glandes salivaires principales, en particulier de la parotide, est extrêmement rare et représente un défi diagnostique important lors des examens d'imagerie cervico-faciaux de routine.

Présentation du cas. Nous rapportons le cas d'un garçon de 15 ans présentant une masse parotidienne droite indolore, d'évolution lente. L'échographie initiale en mode B haute résolution a mis en évidence une masse intraparotidienne bien circonscrite, homogène et hypoéchogène (2 x 3 cm), sans invasion parenchymateuse destructive ni dysmorphie vasculaire manifeste. Les marqueurs biologiques (LDH, ferritine, acide urique) étaient normaux. L'examen

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stage I extranodal disease, revealing reactive bilateral cervical lymphadenopathy without central necrosis or confluent nodal masses, alongside mild non-bulky splenomegaly (14 cm). Serial longitudinal ultrasonographic monitoring demonstrated stable non-progressive cervical lymphadenopathy and spontaneous regression of splenomegaly (139 mm down to 126 mm), confirming disease indolence without systemic progression.

Conclusions. Multi-modality imaging, particularly high-resolution ultrasound and staging CT, plays a critical role in differentiating focal intra-parotid PTFL from aggressive lymphomas or infiltrating pediatric salivary malignancies. Accurate radiological staging paired with characteristic immunophenotypic markers (Bcl-2 negativity) prevent misclassification, supporting conservative surgical excision and non-invasive ultrasound-based "watch-and-wait" active surveillance over toxic systemic immunochemotherapy.

Keywords: pediatric-type follicular lymphoma, pediatric nodal marginal zone lymphoma, parotid gland lymphoma, TNFRSF14 mutation.

List of abbreviations:

PTFL – pediatric-type follicular lymphoma
CT – computed tomography
PNMZL – pediatric nodal marginal zone lymphoma
FL – follicular lymphoma (adult-type)
DLBCL – diffuse large B-cell lymphoma
BL – Burkitt lymphoma
Bcl-2 – B-cell lymphoma 2 (anti-apoptotic protein)
Ki-67 – Ki-67 protein (cell proliferation marker / index)
TNFRSF14 – tumour necrosis factor receptor superfamily member 14
MAP2K1 – mitogen-activated protein kinase 1 (MEK1)
MAPK – mitogen-activated protein kinase (signaling pathway)
T(14;18) – chromosomal translocation(14;18)(q32;q21) involving *IGH* and *BCL2*
LOH – loss of heterozygosity
W&W – watch and wait (conservative active surveillance)
GC – germinal center
IHC – immunohistochemistry
18 F-FDG PET/CT – Fluorine-18 Fluorodeoxyglucose Positron Emission Tomography/Computed Tomography

histopathologique et le profilage immunophénotypique ont confirmé un lymphome folliculaire primitif de la parotide (LFPT) avec différenciation de zone marginale (CD20+, CD10+, Ki-67 élevé ˜90 % et Bcl-2-/Cycline D1-). Un bilan d'extension multimodal a été réalisé: le scanner de stadification du cou, du thorax, de l'abdomen et du pelvis a confirmé une atteinte extraganglionnaire localisée de stade I, révélant une lymphadénopathie cervicale bilatérale réactionnelle sans nécrose centrale ni masse ganglionnaire confluente, associée à une splénomégalie modérée (14 cm). Le suivi échographique longitudinal a démontré une lymphadénopathie cervicale stable et non progressive, ainsi qu'une régression spontanée de la splénomégalie (de 139 mm à 126 mm), confirmant l'indolence de la maladie sans progression systémique.

Conclusions. L'imagerie multimodale, en particulier l'échographie haute résolution et le scanner de stadification, joue un rôle crucial dans la différenciation du LFPT intraparotidien focal des lymphomes agressifs ou des tumeurs malignes infiltrantes des glandes salivaires chez l'enfant. Une stadification radiologique précise, associée à des marqueurs immunophénotypiques caractéristiques (Bcl-2 négatif), évite les erreurs de classification et privilégie l'exérèse chirurgicale conservatrice et une surveillance active non invasive par échographie (watch and wait) plutôt qu'une immunochimiothérapie systémique toxique.

Mots-clés: lymphome folliculaire de type pédiatrique, lymphome ganglionnaire de la zone marginale pédiatrique, lymphome de la glande parotide, mutation TNFRSF14.

Introduction

Pediatric-type follicular lymphoma (PTFL) is formally recognized as a distinct clinicopathological entity within the 5th Edition of the World Health Organization (WHO) and International Consensus Classification (ICC) systems[1,2]. Although follicular lymphoma (FL) is the second most common mature B-cell non-Hodgkin lymphoma (NHL) in adults, it represents only 1% to 2% of pediatric hematologic malignancies[1,3].

Historically considered a morphological variant of classical adult FL, PTFL displays unique biological and clinical hallmarks:

- Demographics: a strong male-to-female predominance (ranging from 4:1 up to 10:1), with a median age of presentation of 15 years[3,4].

- Clinical stage: localized disease (stage I or stage II) involving the cervical, submandibular, or facial lymph node chains[1,4].
- Genetic profile: absence of the t(14;18)(q32;q21) immunoglobulin heavy chain/BCL2 gene translocation that characterizes ≥85% of adult FL cases[1,5].
- Immunophenotype: lack of Bcl-2 protein expression despite high-grade cytological features and high cellular proliferation indices (Ki-67 > 30% and frequently >80%)[4,6].

Primary extranodal presentation of PTFL in the major salivary glands—specifically the parotid gland—is an exceptionally rare event in pediatrics[7,8]. Because parotid enlargement in adolescents is overwhelmingly attributed to benign conditions (e.g., mumps/viral sialadenitis, pleomorphic adenoma, or reactive intra-parotid lymphadenopathy), primary parotid PTFL represents a significant diagnostic challenge[7,9].

We present the case of a 15-year-old male with primary parotid PTFL displaying marginal zone differentiation.

Case presentation

A 15-year-old male presented for medical evaluation on May 26, 2025, because of painless, gradually enlarging swelling over the right parotid region. Systemic symptoms—such as recurrent fever (>38°C), drenching night sweats, or unintentional weight loss (B-symptoms)—were absent. The physical examination revealed a firm, well-circumscribed, non-tender mass localized within the right parotid gland. The overlying skin was normal. The facial nerve function (cranial nerve VII) was intact, bilaterally.

The high-resolution ultrasound demonstrated a well circumscribed mass within the right parotid gland (Figure 1).

The initial blood tests revealed a preserved hematopoietic function, normal renal tests, and no markers of acute tumour lysis syndrome or severe inflammation (Table 1).

The biopsy of the parotid mass showed total architectural replacement of the intra-parotid lymph tissue by serpiginous, expanded follicles, with prominent interfollicular and marginal-zone B-cell expansion. The immunohistochemical (IHC) profiling confirmed a germinal center B-cell derivation with marginal zone differentiation:

- Pan-B and germinal markers: strong expression for CD20+, PAX5+, CD45+, and CD10+ [4,6].
- Differential lineage markers: CD3+ and CD5+ highlighted a background of non-neoplastic T-lymphocytes within interfollicular spaces. CD15+ was positive, while MUM1 showed light/weak expression.
- Proliferation index: Ki-67 was elevated at approximately 90%.

Table 1. Complete laboratory workup.

Test	*Value*	*Reference Values*
Hemoglobin (Hb)	15.8 g/dL	Normal (13.0–16.5 g/dL)
White blood cells (WBC)	6.3 × 10^3/µL	Normal (4.5–11.0 × 10^3/µL)
Neutrophil differential	59.7%	Normal (40.0–70.0%)
Lymphocyte differential	32.1%	Normal (20.0–45.0%)
Platelet count	243 × 10^3/µL	Normal (150–400 × 10^3/µL)
C-reactive protein (CRP)	0.1 mg/dL	Normal (<0.5 mg/dL)
Serum ferritin	218 ng/mL	Normal (15–300 ng/mL)
Lactate dehydrogenase (LDH)	239 U/L	Normal (120–250 U/L)
Uric acid	6.1 mg/dL	Normal (3.5–7.2 mg/dL)
Serum creatinine	0.57 mg/dL	Normal (0.5–1.0 mg/dL)
Blood urea nitrogen	22.2 mg/dL	Normal (10.0–40.0 mg/dL)
AST / ALT	45 U/L / 98 U/L	Mild elevation of ALT
Total bilirubin	0.46 mg/dL	Normal (0.2–1.2 mg/dL)

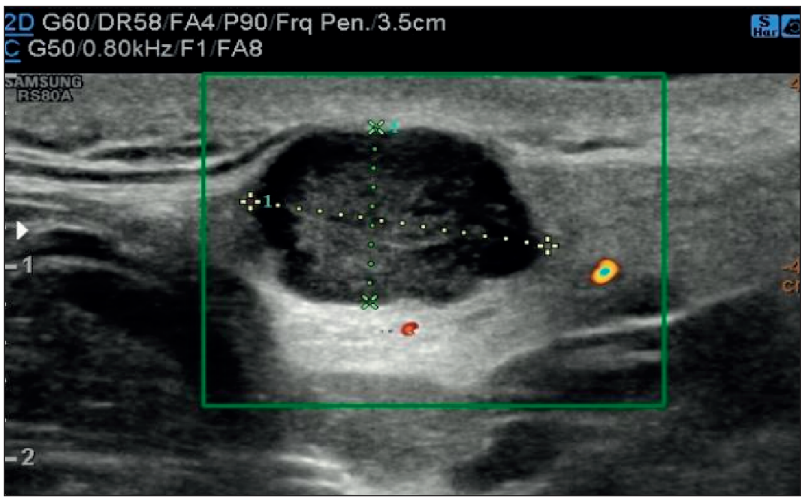


Figure 1. High-resolution ultrasonography of the right parotid gland. B-mode transverse sonogram demonstrating a well-circumscribed, hypoechoic mass.

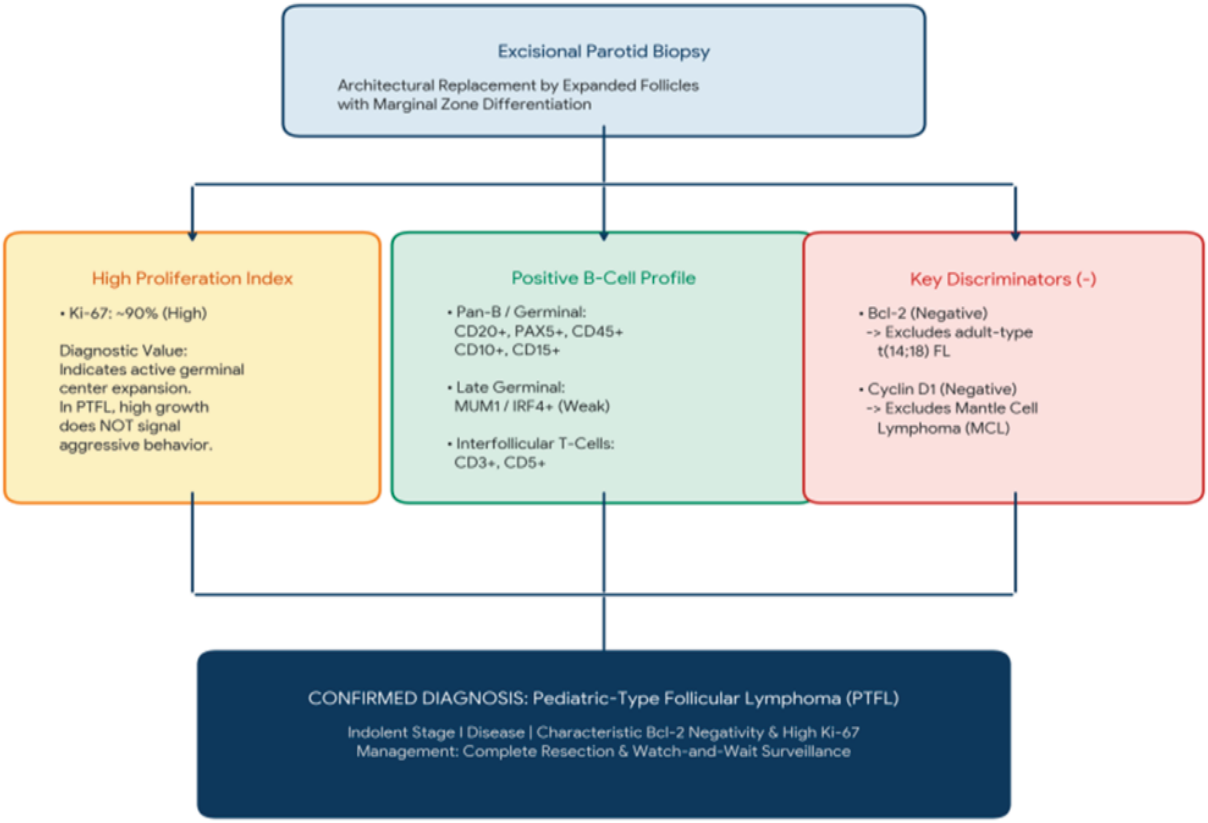


Figure 2. Diagnostic immunophenotypic pathway of pediatric-type follicular lymphoma with marginal zone differentiation. Sequential evaluation from excisional parotid tissue biopsy demonstrating characteristically elevated Ki-67 proliferation index (~90%), positive B-cell line/germinal markers (CD20, CD10, PAX5), and diagnostic negative discriminators (Bcl-2, Cyclin D1) ruling out adult-type t(14;18) follicular lymphoma and mantle cell lymphoma.

Table 2. Literature review of salivary gland lymphoma in pediatrics.

Study / Patient	*Age / Sex*	*Primary site*	*Key IHC features*	*Management*	*Outcome*
Current case	15 yrs / M	Parotid gland	CD20+, CD10+, Bcl-2-, Ki-67 ~90%	Complete resection + observation	Stable/ complete remission
Yang et al. (2023)[7]	18 yrs / M	Left parotid gland	CD20+, CD10+, Bcl-2-, EBER-	Parotidectomy alone	Complete remission (16 months)
Louissaint et al. (2012)[4]	16 yrs (mean)	Cervical / salivary	CD20+, CD10+, Bcl-2, Ki-67 > 40%	Local resection / watch & wait	Excellent (>95% EFS)
Salmeron-Villalobos et al. (2022)[10]	14 yrs / M	Nodal / marginal zone	CD20+, PAX5+, Bcl-2, MAP2K1/ TNFRSF14+	Excision alone	Complete remission

- Key excluded markers: the tumour cells were completely negative for Bcl-2 and Cyclin D1[5,6] (Figure 2).

A comprehensive radiological staging was performed, to evaluate for systemic spread.

1. Neck & head CT scan (August 7, 2025): the head CT scan demonstrated no intracranial or parenchymal brain masses. The neck CT scan showed reactive bilateral cervical lymphadenopathy, without bulky confluent nodal masses.

2. Chest/abdomen/pelvis CT scan (August 7, 2025): no mediastinal, hilar, axillary, retroperitoneal, mesenteric, or inguinal lymphadenopathy, normal liver morphology, spleen length14 cm (borderline/mild splenomegaly).

3. Cervical ultrasound series: baseline (July 23, 2025): sub-centimeter right level III–V nodes; scattered left level III–IV nodes measuring up to 1.3×0.4 cm. Follow-up ultrasound: persistent, stable bilateral reactive lymph nodes (right: 17.4×7.2 mm, left: 17.8×7.0 mm).

4. Abdominal ultrasound series: baseline (July 23, 2025): spleen 139 mm, liver 109 mm. Follow-up (December 3, 2025): spleen regression to 126 mm, liver 134 mm. No intra-abdominal or mesenteric lymphadenopathy.

The final positive diagnosis was PTFL with marginal zone differentiation of the parotid gland. We performed a comparative analysis of the literature regarding reported cases of pediatric salivary gland/parotid lymphomas (Table 2).

Primary non-Hodgkin lymphoma of the salivary glands accounts for less than 5% of all extranodal lymphomas and less than 2% of all parotid tumours in adults, becoming exceptionally rarer in children[8,9]. Most pediatric salivary lymphomas are MALT (mucosa-associated lymphoid tissue) lymphomas or Burkitt lymphomas; primary PTFL localized to the parotid parenchyma or intra-parotid lymph nodes is extremely uncommon[7,8].

Recent genomic studies show that PTFL possesses a distinct, low-complexity genomic landscape[5]. While classical adult FL is driven by t(14;18) translocations resulting in BCL2 constitutive activation, PTFL lacks BCL2 gene breaks[1,5]. Instead, whole-exome and targeted next-generation sequencing (NGS) studies demonstrate that PTFL is driven by recurrent mutations in TNFRSF14 (present in up to 54% of cases), MAP2K1, and IRF8[5,10].

Discussion

The Morphologic spectrum: PTFL vs. pediatric nodal marginal zone lymphoma (PNMZL)

An important diagnostic aspect of this patient's biopsy was the presence of marginal zone differentiation. Historically, pediatric B-cell lymphomas with follicular and interfollicular/marginal patterns were split into two separate diagnostic entities: PTFL and PNMZL[10].

However, recent molecular studies have shown that PTFL and PNMZL share identical genomic profiles, including low copy-number alterations, frequent 1p36/TNFRSF14 loss of heterozygosity, and overlapping MAP2K1 and IRF8 mutations[5,10]. Methylation profiling further confirms that PTFL and PNMZL represent morphological variants along a single biological spectrum [10]. Consequently, pathologists advocate for the unifying terminology: "pediatric-type follicular lymphoma with or without marginal zone differentiation"[1,10].

The 'High Ki-67 Paradox' in PTFL

In adult non-Hodgkin lymphomas, a Ki-67 proliferation index exceeding 30–40% signals transformation to high-grade, aggressive disease (such as grade 3B FL or DLBCL), necessitating immediate intensive immunochemotherapy (e.g., R-CHOP)[11].

In PTFL, however, a high Ki-67 rate (≥80–90%) is a standard finding and does not indicate clinical aggressiveness[4,6]. The blastoid morphological appearance of centroblasts and expanded germinal centers in PTFL naturally yields a high growth fraction[6]. Provided that the tissue is negative for Bcl-2, lacks IRF4 rearrangement, and displays localized disease, an elevated Ki-67 should not prompt overtreatment with aggressive chemotherapy[6,11] (Table 3).

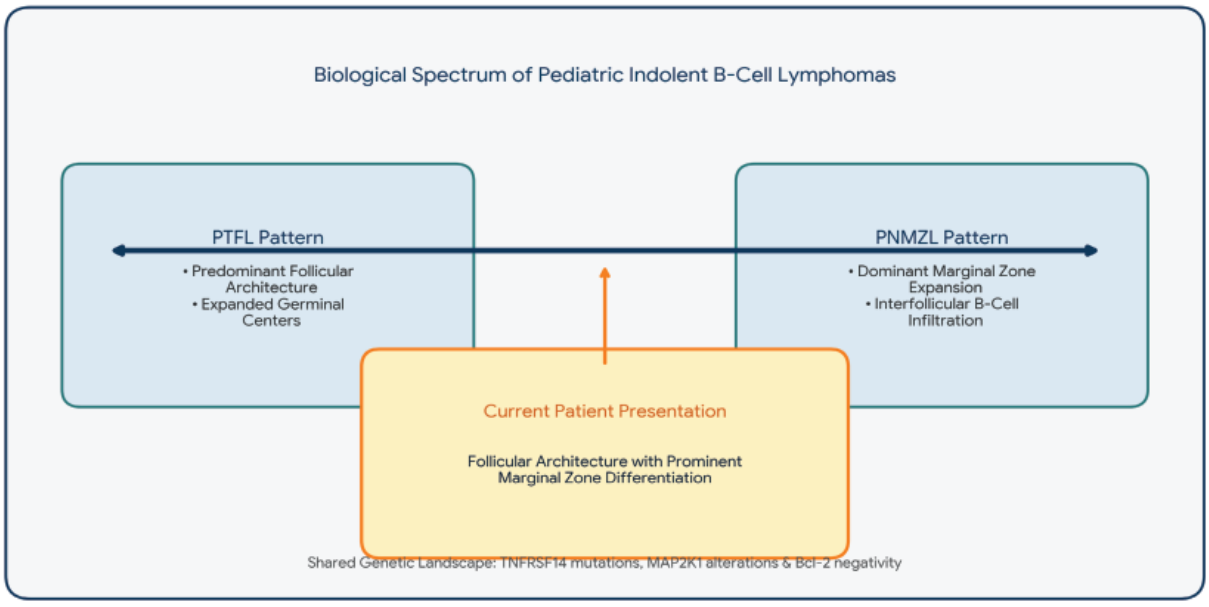


Figure 3. Biological spectrum of pediatric indolent B-cell lymphomas. Schematic representation illustrating PTFL and PNMZL as morphological variants along a continuous biological spectrum. Our patient demonstrated hybrid morphologic features occupying a central position, characterized by prominent follicular architecture alongside marginal zone differentiation while sharing key molecular hallmarks (TNFRSF14 mutations, Bcl-2 negativity).

Table 3. The "high Ki-67 paradox" in PTFL.

Feature	*PTFL*	*Adult FL*	*DLBCL*	*Burkitt*
Median age	15 years	60 years	Variable	5–10 years
Bcl-2 protein	Negative	Positive	Variable	Negative
t(14;18) translocation	Absent	Present	Absent	Absent
Ki-67 index	70–90%	20–40%	>70%	~100%
Clinical course	Indolent	Relapsing	Aggressive	Very aggressive
Recommended treatment	Resection/ W&W	Chemotherapy	Chemotherapy	High-dose chemotherapy

To prevent diagnostic misclassification, parotid masses in pediatric patients should be evaluated through a systematic step-by-step workflow[8,9]:

1. Clinical & ultrasound assessment: distinguish solid parenchymal masses from cystic malformations, chronic sialadenitis, or viral mumps.
2. Tissue sampling: perform excisional or core needle biopsy; fine-needle aspiration (FNA) is usually inadequate for evaluating follicular architecture.
3. Immunohistochemical testing: evaluate CD20, CD10, Bcl-6 to confirm B-cell germinal origin[4]. Perform Bcl-2 staining (if negative, PTFL is highly probable)[4,6]. Perform cyclin D1 and IRF4/MUM1 to exclude mantle cell lymphoma or IRF4-rearranged lymphoma[1,6].
4. Staging imaging: utilize neck/chest/abdomen/pelvis CT or PET-CT to verify localized (stage I) disease[3,12].

Sonographic characterization and differential diagnosis of pediatric intra-parotid masses

High-resolution B-mode ultrasonography (10–15 MHz linear transducers) serves as the first-line, non-invasive imaging modality for evaluating pediatric parotid swellings[13,14]. In our patient, ultrasonography demonstrated a well-circumscribed, homogeneously hypoechoic intra-parotid mass measuring (2x3 cm), without destructive parenchymal extension (Figure 4).

At ultrasonography, intra-parotid PTFL typically appears as a solitary or well-demarcated multinodal hypoechoic lesion, with posterior acoustic enhancement, reflective of its dense lymphocytic cellular architecture[15]. Unlike aggressive malignancies, it preserves outer capsule boundaries, without infiltrating adjacent acinar tissue or facial nerve structures. The color Doppler examination typically shows mild-to-moderate central hilar vascularization or a low-resistance vascular pattern rather than the chaotic, disorganized peripheral neovascularization seen in high-grade carcinomas[14,15].

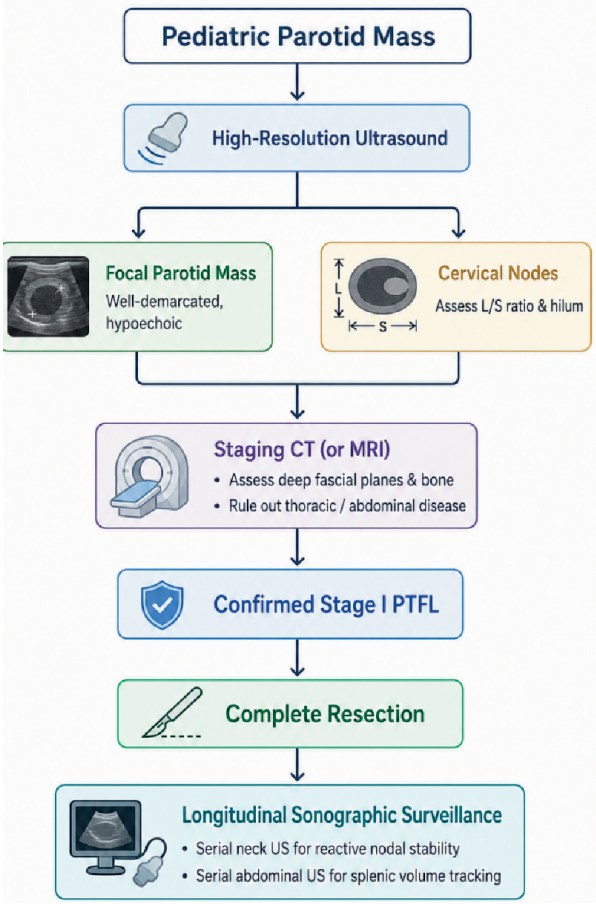


Figure 4. Flowchart of workflow of pediatric parotid mass.

The radiological differential diagnosis in pediatrics:

- *Pleomorphic adenoma:* it demonstrates a hyper-echogenic capsule, lobulated contours, and frequent cystic or calcific degeneration, which were absent in this case.
- *Viral/acute sialadenitis:* it presents as diffuse, heterogeneous glandular enlargement with hypervascularity, unlike the focal, well-defined mass observed in our patient[13,16].
- *Aggressive lymphomas (DLBCL/ Burkitt):* frequently, they present with rapid extranodal growth, extensive parenchymal invasion, acoustic shadowing from necrotic cores, and invasive involvement of surrounding cervical fascia.

While ultrasound excels at anatomical characterization of the salivary parenchyma, cross-sectional imaging is mandatory to exclude systemic lymphadenopathy and verify localized (stage I) disease[16,17]. Contrast-enhanced CT of the head, neck, chest, abdomen, and pelvis in our patient confirmed a solitary right intra-parotid mass without skull base

Table 4. Key summary table: imaging features across the different types of lymphomas.

Imaging Modality / Parameter	*Pediatric-Type Follicular Lymphoma (PTFL)*	*Adult-Type Follicular Lymphoma*	*Diffuse Large B-Cell Lymphoma (DLBCL)*	*Reactive Intra-Parotid Node*
B-mode sonography	Well-circumscribed, homogeneously hypoechoic	Heterogeneous, hypoechoic, multiple nodes	Infiltrative, heterogeneous, acoustic shadowing	Oval, hypoechoic rim with prominent hyperechoic hilum
Nodal margins	Smooth, encapsulated	Indistinct / confluent	Invasive, loss of fascial planes	Smooth, intact capsule
CT appearance	Homogeneous enhancement, no bone destruction	Nodal masses, systemic dissemination	Bulky, necrotic, invasion of deep spaces	Normal size/shape, sub-centimeter or reactive
Splenic findings	Transient / mild non-bulky splenomegaly	Frequent lymphomatous infiltration	Frequent focal hypocaptive lesions	Normal / mild reactive splenomegaly
Surveillance choice	High-resolution ultrasound (Radiation-free)	CT / PET-CT	PET-CT	Ultrasound

invasion, bone erosion, or deep neck space infiltration. Cervical node enlargement was bilateral, symmetric, and characterized by preserved fatty hila and smooth margins—radiological hallmarks of reactive lymphadenopathy rather than malignant nodal dissemination.

When CT is equivocal or radiation exposure is a primary concern, magnetic resonance imaging (MRI) with diffusion-weighted imaging (DWI) provides superior soft-tissue contrast[17]:

- T1/T2 signal profile: PTFL typically exhibits low-to-intermediate signal intensity on T1-weighted images and intermediate-to-high signal intensity on T2-weighted sequences.
- Apparent diffusion coefficient (ADC): due to high cellular density, PTFL demonstrates restricted diffusion with low ADC values ($0.6–0.8 \times 10^{-3}$ mm^2/s). However, unlike DLBCL, the absence of necrotic components yields homogeneous signal attenuation across the tumour volume.

Although Fluorine-18 Fluorodeoxyglucose Positron Emission Tomography/Computed Tomography (18 F-FDG PET/CT) is standard in adult follicular lymphoma, its routine use in localized pediatric PTFL remains controversial due to ionizing radiation exposure. Low-to-moderate standardized uptake values (SUV max) are typical for PTFL. PET/CT should be reserved for cases in whom clinical or sonographic findings suspect multi-focal systemic involvement or incomplete primary surgical excision[17,18].

Longitudinal ultrasonographic surveillance in "watch-and-wait" protocols

Because complete surgical excision of localized stage I PTFL yields long-term event-free survival rates exceeding 95%, serial radiological surveillance replaces systemic chemotherapy. High-resolution ultrasound serves as the ideal surveillance tool, eliminating cumulative radiation exposure in pediatric patients[19]:

1. Nodal architecture tracking: serial sonograms-evaluate cervical lymph nodes using the long-to-short axis ratio (L/S > 2.0 favoring reactive etiology), preservation of the central hyperechoic fatty hilum, and stable anteroposterior dimensions[14,15]. In our patient, follow-up neck ultrasounds demonstrated persistent but stable, non-progressive reactive bilateral cervical nodes (right 17.4x7.2 mm, left 17.8x7.0 mm).
2. Organometric monitoring (splenomegaly tracking): sonography provides an accurate volumetric quantification of the spleen without anatomical distortion. Baseline abdominal ultrasound recorded mild splenomegaly (139mm), which spontaneously regressed to 126 mm on 5-month follow-up imaging. This sonographic regression strongly corroborated the indolent, non-systemic nature of the disease, reinforcing the decision to maintain active surveillance without systemic chemo-immunotherapy[18,19].

The diagnostic imaging features across the different types of lymphomas are presented in Table 4.

Management guidelines: complete resection vs. "watch-and-wait"

The consensus guidelines from the European Intergroup for Childhood Non-Hodgkin Lymphoma (EICNHL) and National Comprehensive Cancer Network (NCCN) recommend conservative management for stage I PTFL[11,12]:

Complete surgical excision: if the parotid lesion is completely resected during diagnostic biopsy, no further adjuvant chemotherapy or radiation is indicated[7,11].

Observation ("watch-and-wait"): patients managed with complete excision and observation achieve a 5-year overall survival rate exceeding 95–100%[3,11].

Indications for chemotherapy: systemic polychemotherapy (e.g., low-dose COP/CHOP or Rituximab

monotherapy) is reserved exclusively for incomplete resections, unresectable bulky disease causing organ compression, or rare relapses[11,12].

In our patient, serial follow-up ultrasounds demonstrated stable, sub-centimeter reactive neck lymph nodes and resolution of splenomegaly (139 mm → 126 mm), confirming an indolent course under active surveillance.

Conclusions

Primary pediatric parotid follicular lymphoma with marginal zone differentiation represents an exceptionally rare extranodal presentation of an indolent entity. Radiologists, pediatric oncologists, and pathologists must recognize the crucial role of multi-modality imaging in establishing disease extent and guiding clinical decision-making. High-resolution ultrasonography serves as the primary non-invasive modality to identify well-circumscribed, hypoechoic intra-parotid lesions and differentiate them from aggressive, infiltrative neoplasms. Staging CT and long-term sonographic surveillance are indispensable for confirming localized (stage I) disease, assessing reactive versus metastatic lymphadenopathy, and tracking spontaneous organometric stabilization (such as splenic regression).

When paired with key immunophenotypic signatures—most notably the pathognomonic absence of Bcl-2 expression, which offsets the misleading high growth fraction (Ki-67 approx 90%)—radiological staging justifies avoiding aggressive systemic immunochemotherapy. Complete surgical resection supplemented by serial ultrasound-based active surveillance remains the optimal management strategy, providing excellent long-term disease control while sparing pediatric patients unnecessary chemotherapeutic toxicity.

Author Contributions:

Conceptualization, B.T. and D.B.; methodology, B.T.; software, E.D; validation, B.T. and M.K.; formal analysis, B.T.; investigation, B.T.; resources, B.T; data curation, B.D. and M.XH.; writing–original draft preparation, B.T.; writing–review and editing, D.B, M.XH, M.K; visualization, B.D. and D.B.; supervision, B.T.; project administration, B.T. All the authors have read and agreed with the final version of the article.

Compliance with Ethics Requirements:

"The authors declare no conflict of interest regarding this article"

"The authors declare that all the procedures and experiments of this study respect the ethical standards in the Helsinki Declaration of 1975, as revised in 2008(5), as well as the national law. Informed consent was obtained from the guardians of the patient included in the study"

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