Primary non-Hodgkin’s lymphoma of the mandible

Dinakar J, Lakshmi Priya, Samyukta Reddy
Department of Oral Pathology, Sri Ramakrishna Dental College and Hospital, Coimbatore, India

Address for correspondence:
Dr. Dinakar J, Department of Oral Pathology,
Sri Ramakrishna Dental College and Hospital,
Coimbatore, India.
E-mail: dinadentist@yahoo.co.in

ABSTRACT
Primary non-Hodgkin’s lymphoma is a very uncommon lesion, accounting for
0.6% in jaws. As the lesions frequently resemble other disease such as chronic
osteomyelitis, odontogenic or any secondary neoplasms, further evaluation
and histopathologic examination allow early identification for appropriate
treatment. The purpose of this case report is to describe a rare case of non-
Hodgkin’s lymphoma of the mandible, explore the diagnosis and workup based
on immunohistochemistry.

Key words: Immunohistochemistry, mandible, primary non-Hodgkin’s lymphoma

INTRODUCTION
Malignant lymphoma is a neoplastic process of the lymphopoietic portion of the reticulo-endothelial system. Most
of them originate from B-lymphocytes. Lymphoma is the second
common malignancy of head and neck. Primary non-Hodgkin’s
lymphoma (NHL) of the bone is rare, accounting for <5%,
and that of the mandible is 0.6%. In 1963, the term primary
lymphoma of bone was introduced by Ivins and Dahlin. The
etiology is unknown even though virus and immunosuppression
are implicated. The most common manifestation is pain and
swelling in the jaw bone, but it is often clinically diagnosed
as a dental infection. Hence, the diagnosis of lymphoma in
jaw bone is often delayed. Biopsy is considered when there is
a non-healing extraction wound and if any extra-oral wound
is not resolving for a prolonged period. The histopathological
diagnosis has to be confirmed by immunohistochemistry.

The WHO diagnostic criteria for primary lymphoma of bone
are a primary focus in a single bone and histologic confirmation
and, at the time of diagnosis, no evidence of distant soft tissue
or lymph node involvement. There are no pathognomonic
radiographic findings. Paresthesia along the inferior alveolar
nerve distribution is a common finding, with reports ranging
upto 20%. We present a case with a dental complaint which
was later diagnosed as primary non-Hodgkin’s lymphoma of
the mandible.

CASE REPORT
A 54-year-old male presented with a past history of non-resolving
extra-oral swelling on the right of the face. He underwent
surgical removal of impacted right mandibular third molar 2
months back by an outside practitioner. He was under antibiotics
and anti-inflammatory drug coverage for a few days. Following
extraction, the swelling did not resolve and, subsequently, they
extracted 47 and 46 presuming some dental infection.

On extra-oral examination, a diffuse swelling was noted on the
right side of the face near the angle of the mandible [Figure 1].
Intra-oral examination revealed a fleshy mass in the region of
46, 47 and 48. On palpation, the mass was tender [Figure 2].
Medical history was not contributory. Radiographically,
minimal radiolucency in the 47 tooth region was seen. Based
on the history and examination, a provisional diagnosis of
“chronic osteomyelitis” was made. An intra-oral biopsy from
the retromolar region was taken.

Histopathology showed sheets of atypical lymphoid cells.
The individual cells were polyhedral with scant eosinophilic
cytoplasm. The nuclei showed irregular membrane, open
chromatin and prominent nucleoli. Foci of atypical mitotic
figures were also seen. The lymphoid cells were seen infiltrating
the bone. Areas of sclerosis, necrosis and hemorrhage were
seen amidst these cells. Bony trabeculae, fibro-collagenous
tissue and neural elements were seen [Figures 3 and 4]. The
immunohistochemistry profile showed positivity for leucocyte
common antigen (LCA) (CD 45) [Figure 5] and CD20
[Figure 6]. Based on histopathology and immunohistochemistry,
a diagnosis of non-Hodgkin’s lymphoma was made.

The patient’s general health was examined by a physician
to find out involvement of any other site. Investigations like
hemogram, radiograph and computed tomography (CT) scan
were performed and no other site except the mandible showed
involvement. Based on all the findings, a diagnosis of primary
lymphoma of mandible was made. He was then referred to an
oncologist for treatment.

DISCUSSION
Primary non-Hodgkin’s lymphoma in extranodal sites accounts
for 24–45% of the cases.\textsuperscript{[3,4]} The common extranodal site is the gastrointestinal tract. The mandible accounts for only 0.6% of the isolated malignant non-Hodgkin’s lymphoma.\textsuperscript{[5]} Whenever non-Hodgkin’s occurs in jaw bones, it is initially mistaken for a dental infection.\textsuperscript{[5,6]} Thus, diagnosis of NHL is delayed. Many times, it is treated initially as dent-alveolar abscess or osteomyelitis.\textsuperscript{[7]} A biopsy is performed only when there is no proper response to antibiotic treatment. The criteria
for diagnosis of primary lymphoma of bone is suggested by Coley in 1950 with minor modifications as follows: lymphoma presenting in an osseous site with no evidence of disease elsewhere for at least 6 months after diagnosis.\[^5\]

Primary bone lymphoma occurs in patients from 1 to 86 years (median range, 36–56 years) of age, with peak prevalence among patients in the 6\(^{th}\) and 7\(^{th}\) decades of life. Our patient was in the 6\(^{th}\) decade of life.

Most of the cases initially present as an odontogenic infection. Parrington et al. have discussed a case of primary lymphoma of the mandible presenting after tooth extraction.\[^1\] Leva Djavanmardi et al. have reviewed 16 cases of malignant non-Hodgkin’s lymphoma of the jaws and found that diagnosis that was usually difficult and was often misleading and delayed before the first bone biopsy.\[^8\] Our case also demonstrated diagnostic difficulty by the dentist. Even the radiograph was not contributory to suspect a malignancy. There was not much of lytic destruction. Gusenbauer et al., in a case report of primary lymphoma of the mandible, emphasized that malignant lymphoma must be considered in the differential diagnosis of unexplained dental pain and swelling.\[^10\] Bertolotto et al. have reported a case of primary lymphoma of the mandible with diffuse widening of the mandibular canal.\[^11\] There are no pathognomonic radiographic findings. Features are usually that of non-specific osteolysis.

Usually, biopsy is carried out in the non-healing extraction site after repeated treatment for non-responding odontogenic infection.\[^12\] Histopathology usually shows sheets of chronic inflammatory cells, especially lymphocytes, mimicking an inflammatory reaction. Careful examination by an expert histopathologist is necessary to find out the pleomorphic and atypical lymphoid cells. In our case, the histopathology showed sheets of lymphoid cells infiltrating the bone, with atypical mitotic figures, areas of sclerosis, necrosis and hemorrhage. Lymphoma was suspected and immunohistochemistry was performed for the following markers: LCA (CD45), CD15, CD20, CD30, PAN-CK, EMA, ALK1 and CD3. The result was positive for LCA (CD45) [Figure 5] and CD20 [Figure 6]. Therefore, based on the immunohistochemistry profile, a diagnosis of non-Hodgkin’s lymphoma was made.

When tissue diagnosis is confirmed as NHL of the mandible, determination must be made regarding orientation and spread of tumor. Overall assessment is essential to rule out nodal and visceral involvement.

A CT scan and Positron emission tomography (PET) scan can be carried out to look out for extranodal involvement.\[^13\] Laboratory studies are not specific, although elevated lactate dehydrogenase is observed as a poor diagnostic factor.

In our case, we ruled out any other site involvement with a general physician. Investigations like hemogram, radiograph and CT scan were performed.

Accurate staging is essential to start the treatment and management. Staging takes into account the involved site and degree of dissemination. Primary NHL of bone as a single focus in an extranodal site is categorized as stage 1. Bachaud et al. have found that stage 1 NHL has a 5-year survival rate of 70%, and the median survival time for stage 1 is 10 years. The 5-year survival rate for stage 1 NHL of the maxillo-mandibular region is reported to be approximately 50%.\[^14\]

The treatment of NHL is combination of surgery and chemotherapy-radiotherapy. In our case, after surgery, the patient was referred to an oncologist for chemotherapy and radiotherapy. The patient is responding well to the treatment. Beal et al., in a long-term follow-up of 82 patients with primary bone lymphoma, have found that patient’s prognosis is excellent, with a 5-year survival rate of 95%.\[^9\]

Lymphoma of bone should be considered in the differential diagnosis of long-standing, non-healing extraction wound.

ACKNOWLEDGMENT

The authors would like to acknowledge the help of Dr. J. M. Jeyraj, Principal, Sri Ramakrishna Dental College and Hospital, Coimbatore.

REFERENCES

1. Boulaadas M, Benazzou S, Sefiani S, Nazih N, Essakalli L, Kzadri M. Primary extranodal non-Hodgkin’s lymphoma of the oral cavity. J Craniomaxfac Surg 2008;19:1183-5.
2. Longo F, De Maria G, Esposito P, Califano L. Primary non-hodgkin’s lymphoma of mandible; a case report. Int J Oral Maxillofac Surg 2004;33:801-3.
3. Freeman C, Berg JW, Cutler SJ. Occurrence and prognosis of extranodal lymphomas. Cancer 1972;29:252-60.
4. Temmim L, Baker H, Amanguno H, Madda JP, Sinowitz F. Clinicopathological features of extranodal lymphomas. Oncology 2004;67:382-9.
5. Rahmat K. Primary bone lymphoma - a case report with multifocal skeletal involvement. Biomed Imaging Interv J 2008;3:e52.
6. Beal K, Allen L, Yahalom J. Primary bone lymphoma. Cancer 2006;106:2652-6.
7. Sarda AK, Kannan R, Gupta A, Mahajan V, Jain PK, Prasad S, et al. Isolated non-hodgkin’s lymphoma of the mandible. J Postgrad Med 2006;42:187-9.
8. Parrington SJ, Punnia-Moorthly A. Primary non-hodgkin’s lymphoma of the mandible presenting following tooth extraction. Br Dent J 1997;187:468-70.
9. Djavanmardi L, Oprean N, Alantan A, Bousetta K, Princ G. Malignant non-hodgkin’s lymphoma of the jaws - a review of 16 cases. J Craniomaxillofac Surg 2008;36:410-4.
10. Gusenbauer AW, Katsikeris NF, Brown A. Primary lymphoma of bone. J Oral Maxillofac Surg 1990;48:409-15.
11. Bertolotto M, Cecchini G, Martinelli C, Perrone R, Garlaschi G. Primary lymphoma of mandible with diffuse widening of the mandibular canal. Eur Radiol 1996;6:637-9.
12. van der Waal RI, Huijgens PC, van der Valk P, van der Waal
I. Characteristics of 40 primary extranodal non-Hodgkin’s lymphomas of the oral cavity in perspective of the new WHO classification and international prognostic index. Int J Oral Maxillofac Surg 2005;34:391-5.

13. Mawardi H, Cutler C, Treister N. Medical management update: non-Hodgkin’s lymphoma. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2009;107:e19-e33.

14. Bachaud JM, Coppin D, Douchez J, Boutault F, Paty E, Saboye J, et al. Primary malignant lymphoma of the mandible; a study of 3 cases and review of literature. Rev Stomatol Chir Maxillofac 1992;93:372-6.

Source of Support: Nil. Conflict of Interest: None declared.