**t(1;8)(p21-22;q24)**

Adriana Zamecnikova

Kuwait Cancer Control Center, Department of Hematology, Laboratory of Cancer Genetics, Kuwait; annaadria@yahoo.com

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**Abstract**

Review on t(1;8)(p21-22;q24), with data on clinics, and the genes involved.

**KEYWORDS**

chromosome 1; chromosome 8; MYC; Multiple myeloma

**Clinics and pathology**

**Disease**

Multiple myeloma (MM) mainly

<table>
<thead>
<tr>
<th>Sex/Age</th>
<th>Disease</th>
<th>Karyotype</th>
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<tbody>
<tr>
<td>1 M/76</td>
<td>AML</td>
<td>43,X,-Y,-1,t(1;8)[p22;q24],-11,der(11)(t11;13)[q23-25;q12-14],-13,-16,-17,add(17) (p11),+22,der(22)(t1;22)(q11;p11-12)x2,+mar</td>
</tr>
<tr>
<td>2 F</td>
<td>Mantle cell lymphoma LN</td>
<td>42-45,X,add(X)[q22],der(1)(t1;6)(p32;q15),t(2;3)[q37;q21],del(5)[q13q22],del(6)[q15], +7,del(10)[q24],-13,del(14;18)[q32;q21],-15,-17,der(22)(t13;22)(q12-14;q11-13),+4 -5mar,inc/46,X,add(X),der(1),t(1;8)[p21;q24],t(3;19)[q28;p13],del(5),del(6),+7,del(10),-13,t(14;18),-15,der(19)[t3;19],der(22)</td>
</tr>
<tr>
<td>3 M/70</td>
<td>MM</td>
<td>45,X,-Y/44,XY,+1,der(1;16)[q10;p10],+der(1;21)[q10;p10],t(1;8)[p21;q24],-13,-14</td>
</tr>
<tr>
<td>4 M</td>
<td>MM</td>
<td>54,X,-Y,del(1)[p21p22],+der(1)(t1;8)[p13;q12],t(1;8)[p22;q24],+3,t(4;16)[q13;p10], +5,add(5)[p15],+7,-8,der(8;16)[q11;q11],+9,+11,+15,+19,+21</td>
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**Epidemiology**

5 cases presented with multiple myeloma (3 males and 2 females aged 43 to 73 years) (Mugneret et al., 1995; Smadja et al., 2001; Kaufmann et al., 2003; Mohamed et al., 2007) and there was one 76-years old male with acute myeloid leukemia (AML) (Oshimura et al., 1976) and 1 female with mantle cell lymphoma (Knuutila et al., 1994)) (Table 1).
t(1;8)(p21-22;q24)

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<tr>
<td>5</td>
<td>M</td>
<td>MM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>43,X,Y,del(1)(p21),t(1;8)(p21;q24),add(4)(p16),add(8)(p10),-13,-22</td>
</tr>
<tr>
<td>6</td>
<td>F/43</td>
<td>MM</td>
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<tr>
<td></td>
<td></td>
<td>48-49,X,Y,der(1;9)(q10;p10),t(1;8)(p21;q24),+3,add(5)(q35),-16,+18,+19,+21</td>
</tr>
<tr>
<td>7</td>
<td>F/61</td>
<td>MM</td>
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<tr>
<td></td>
<td></td>
<td>49,X,Y,t(1;8)(p22;q24),+5,del(14)(q22),+15,+15,add(22)(q11),+mar</td>
</tr>
</tbody>
</table>

Abbreviations: M, male; F, female; AML, acute myeloid leukemia; LN, lymph node; MM, multiple myeloma.


Partial karyotypes showing t(1;8)(p22;q24). (A) Fluorescence in situ hybridization with Vysis LSI MYC SpectrumOrange Probe probe (Abott Molecular, US) showing the MYC signal (red) on der(8) chromosome. (B) Simultaneous hybridization with Vysis LSI MYC SpectrumOrange Probe and LSI 1p36 (SpectrumOrange)/1q25 (SpectrumGreen) probes (Abott Molecular, US) showing translocation of 1p sequences distal to MYC on der(8) chromosome.

**Additional anomalies**

Additional anomalies Complex karyotypes showing either hypodiploid or hyperdiploid karyotypes; associated with t(14;18)(q32;q21) and -13 in the mantle cell lymphoma case (Knuutila et al., 1994) and monosomy 13 in AML (Oshimura et al., 1976) and in 2 MM patients (Mugneret et al., 1995; Kaufmann et al., 2003).

**Result of the chromosomal anomaly**

**Fusion protein**

Oncogenesis

The chromosomal translocation t(1;8)(p21-22;q24) is a rare anomaly, that has been described mainly in multiple myeloma patients. It involves the MYC loci at 8q24, however MYC rearrangement and/or its overexpression was studied only in sporadic cases (Mugneret et al., 1995). It is also possible, that breakpoints may be located in the vicinity of MYC locus, at least in some patients with dispersed 1p21-22 breakpoints, therefore the molecular consequences of this rearrangement are likely be heterogeneous and probably disease specific. In all the described cases, the t(1;8)(p21-22;q24) was part of complex karyotypes, indicating that it developed concurrently with other genetic alterations and likely to be a late progression event important in disease progression.

**References**


This article should be referenced as such: