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Incidence, mortality, and survival trends of soft tissue and bone sarcoma in Switzerland between 1996 and 2015

A. Kollár[1], C. Rothermundt[2], F. Klenke[3], B. Bode[4], D. Baumhoer[5], V. Arndt[6,7], A. Feller[6], the NICER Working Group

[1]Department of Medical Oncology, Inselspital, Bern University Hospital, University of Bern, Freiburgstrasse, CH-3010 Bern, Switzerland
[2]Department of Medical Oncology and Hematology, Cantonal Hospital St. Gallen, Rorschacher Strasse 95, CH-9007 St.Gallen, Switzerland
[3]Department of Orthopedic Surgery, Inselspital, Bern University Hospital, Freiburgstrasse, CH-3010 Bern, Switzerland
[4]University of Zurich and Institute of Pathology Enge, Hardturmstrasse 133, 8005 Zurich, Switzerland
[5]Bone Tumour Reference Centre at the Institute of Pathology, University Hospital and University of Basel, Schoenbeinstrasse 40, CH-4031 Basel, Switzerland
[6]Foundation National Institute for Cancer Epidemiology and Registration (NICER) c/o University of Zurich, Seilergraben 49, CH-8001 Zurich, Switzerland
[7]Unit of Cancer Survivorship, Division of Clinical Epidemiology and Aging Research & Epidemiological Cancer Registry Baden-Württemberg, German Cancer Research Center (dkfz), Im Neuenheimer Feld 280, D-69120 Heidelberg, Germany

Background

Research on soft tissue (STS) and bone sarcoma (BS) is increasingly in the focus of physicians and pharmaceutical companies. Expanding knowledge has improved the management of sarcoma and survival. Here we provide the first population-based data on time trends of STS and BS incidence, mortality, and survival in Switzerland diagnosed between 1996 and 2015.

Methods

We performed a retrospective registry study with data from the National Institute for Cancer Epidemiology and Registration (NICER) database in Switzerland from 1996 to 2015. All cancer cases collected by NICER were coded according to the third revision of the International Classification of Diseases for Oncology (ICD-O-3).

Results

We identified 5500 STS and 876 BS patients, respectively. The three most common STS subtypes were undifferentiated/unclassified sarcoma (23.1%), liposarcoma (20.2%) and leiomyosarcoma (20.0%). Chondrosarcoma, osteosarcoma and Ewing sarcoma represented 43.8%, 31.6% and 20.8% of the BS group, respectively. (Table 1/ 2, Figure 2) The age-standardized incidence and mortality rates in 2011-2015 were 4.47 and 1.42 per 100,000 person-years for STS, and 0.93 and 0.42 for BS. (Figure 1) Age-standardized incidence of STS in males was significantly higher 1996 - 2000 compared to 2001 – 2015, however mortality rates did not change significantly over time. Five-year relative survival (RS) for STS improved significantly from 56.6% [95%CI 53.1%-59.9%] (1996-2001) to 62% [95%CI 59.0-64.8] (2011-2015) (p=0.017). No improvement of 5-year RS for BS could be observed (RS 1996-2000: 67.3 [95%CI 58.0-74.8]; RS 2011-2015: 71.1% [95%CI 64.3-76.8]; p= 0.728). (Figure 3)

	N	%
Overall	876	100.0
Sex		
Males	490	55.9
Females	386	44.1
Age (years)		
Median age	39	
Time period		
1996-2000	162	18.5
2001-2005	204	23.3
2006-2010	206	23.5
2011-2015	304	34.7
Histologic group		
Chondrosarcoma	384	43.8
Conventional	357	92.0
Mesenchymal	16	2.9
Dedifferentiated	11	4.3
Osteosarcoma	277	31.6
Conventional	257	92.8
Others	20	7.2
Ewing Sarcoma	182	20.8
Others	33	3.8

Table 2: Characteristics of BS patients reported to Swiss cancer registries, 1996-2015

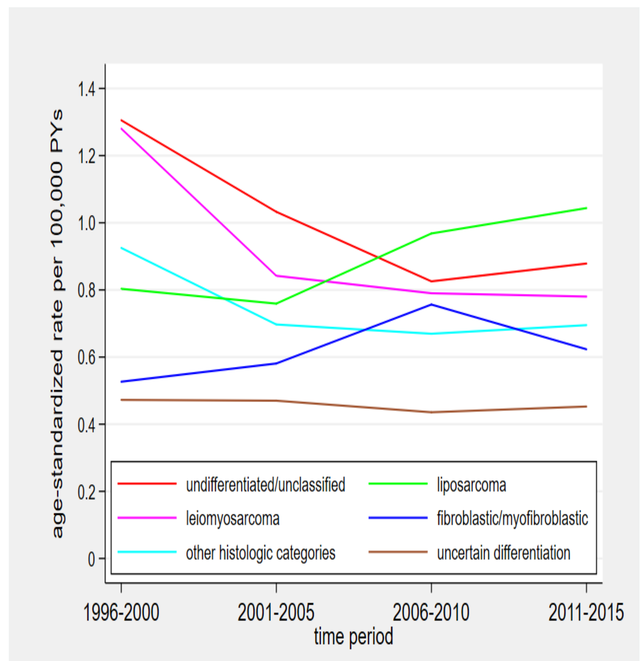
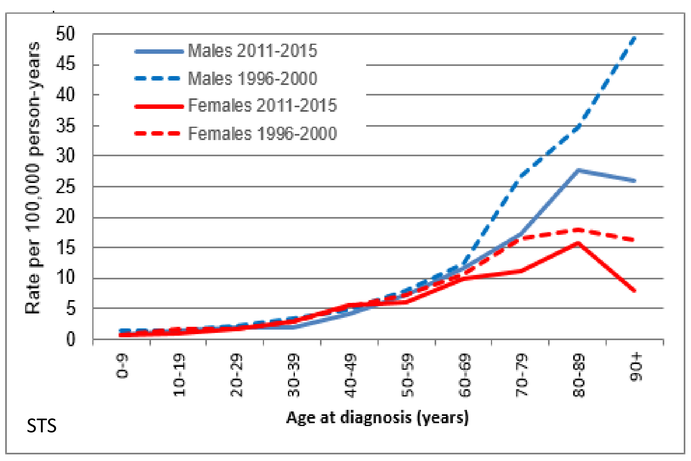


Figure 2: Incidence rates for the five most common histologic categories of STS



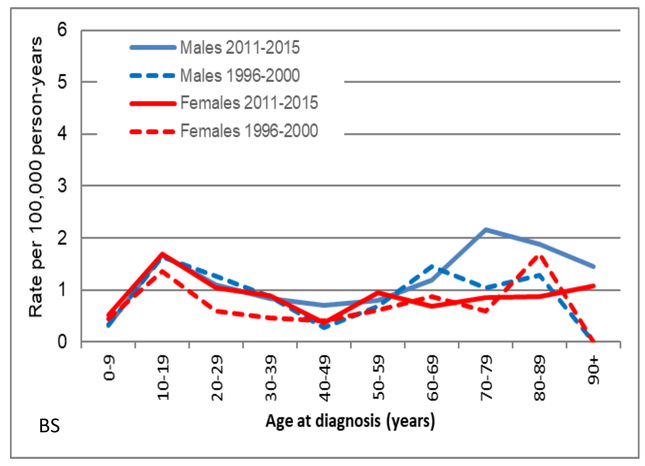
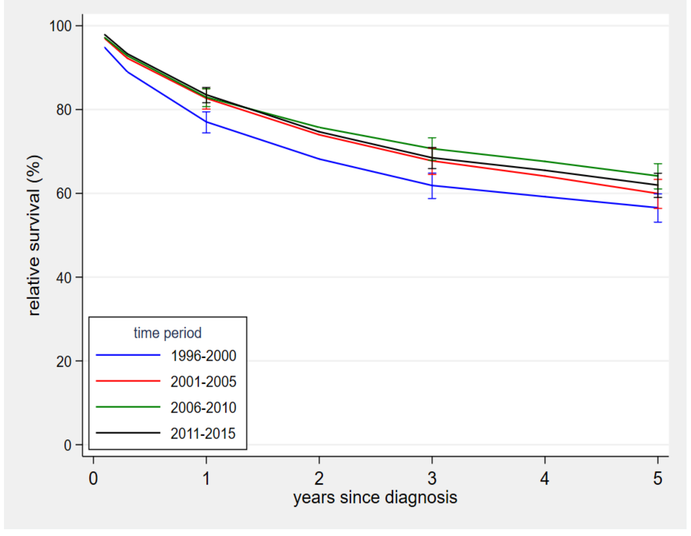


Figure 1: Age-specific incidence of STS and BS, 1996-2000 and 2011-2015

	N	%
Overall	5,500	100.0
Sex		
Males	2,771	50.4
Females	2,729	49.6
Age (years)		
Median age	62	
Time period		
1996-2000	1,286	23.4
2001-2005	1,111	20.2
2006-2010	1,315	23.9
2011-2015	1,788	32.5
Histologic group		
Undifferentiated/ unclassified sarcoma	1,271	23.1
Liposarcoma	1,108	20.2
Well-differentiated	296	26.7
Dedifferentiated	154	13.9
Myxoid-round cell	221	20.0
Pleomorphic	103	9.3
Others	334	30.1
Leiomyosarcoma	1,103	20.1
Fibroplastic/myofibroblastic	703	12.8
Tumours of uncertain differentiation	494	9.0
Vascular sarcoma	328	6.0
Nerve sheat tumours	264	4.8
Pericytic (perivascular) sarcoma	39	0.7
Rhabdomyosarcoma	184	3.4
So-called fibrohistiocytic	6	0.1
Anatomic location		
Extremity	1,730	31.5
Trunk	813	14.8
Head or neck	557	10.1
Retroperitoneal	449	8.2
Others	344	6.3
Uterus	331	6.0
Pelvis (nonvisceral)	295	5.4
Gastrointestinal	259	4.7
Heart, mediastinum, lung or pleura	216	3.9
Breast	204	3.7
Genitourinary	181	3.3
Unknown	62	1.1
Gynecologic (other than uterus)	59	1.1

Table 1: Characteristics of STS patients reported to Swiss cancer registries, 1996-2015



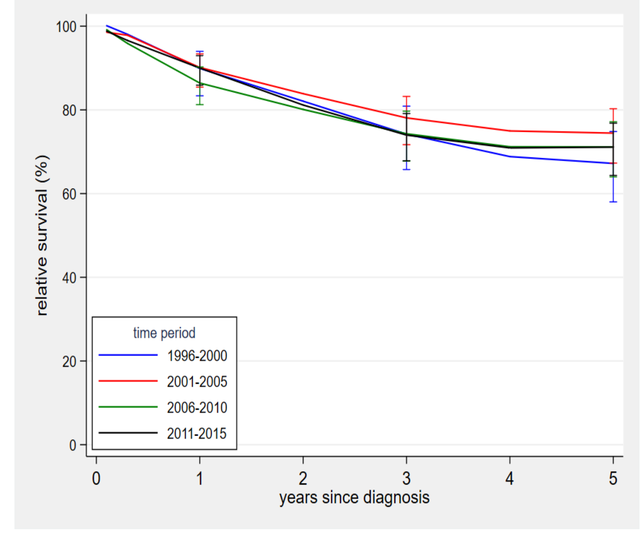


Figure 3: Age-standardized Survival for STS and BS

Conclusion

Incidence rates of STS and BS have been stable since 2001. The longer relative survival in STS can most likely be attributed to advancements in sarcoma patient management.