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Case Report **Open Access**

Combined treatment extraskeletal Ewing sarcoma of the seminal vesicle: Case report and literature review

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Abstract

Introduction Exceptional sites of occurrence of extraskeletal Ewing's sarcoma/PNET include several organs of the genitourinary system. The Ewing's sarcoma/PNET is an extremely rare prostate and seminal vesicle sarcoma. Such lesions are often overlooked in the differential diagnosis of pelvic masses. The purpose of this article reports the case of an extraskeletal Ewing's seminal vesical sarcoma (EESVS) and to conduct a literature review on the topic (literature review was done using the PubMed/Medline databases up to June 2018).

Case presentation A 35-year old male complained about chronic pain in the lower left quadrant of the abdomen. Magnetic resonance imaging (MRI) revealed a massive tumor surrounding the left seminal vesicle with no metastatic lesions (on PET-CT). Prostate and tumor biopsy with sub-sequent immunohistochemical analysis (IHC) revealed changes specific to Ewing's sarcoma. Neoadjuvant chemotherapy 6 cycles were performed with partial response before surgical treatment followed by laparoscopic vesicalectomy with resection of the left ureter and bladder wall.

Conclusion Neoadjuvant chemotherapy followed by surgical resection of EESVS is considered as the best treatment approach in such clinical situations according to literature review.

Keywords: sarcoma, seminal vesicle, Extraskeletal Ewing's sarcoma, small round cell tumors.

Introduction

Extraskeletal Ewing sarcoma of exceptional sites include several organs of the genitourinary system. The Ewing's sarcoma occurs an extremely rare in prostate and seminal vesicle tissue in children and young adults and accounts less than 0.1% of all primary tumors. The prognosis of such tumors is generally poor and requires aggressive multimodal management despite the limited data in this area [1, 2]. Therefore, we decided to describe the first case Extraskeletal Ewing sarcoma arising from the seminal vesicle, outline the appropriate investigation and management in Russia. We report a 35-year young man who had been successfully treated with chemotherapy followed by radical surgery for a seminal vesicle sarcoma.

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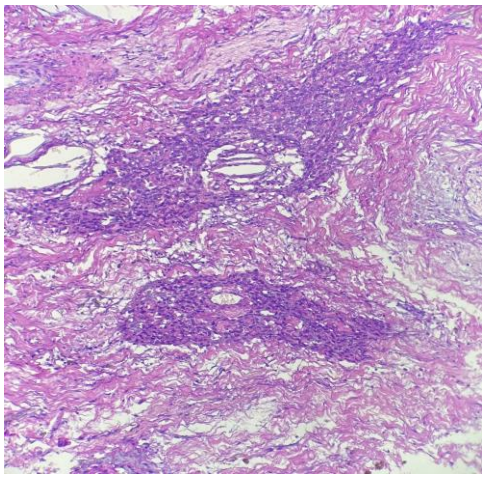

Figure 1: section of the seminal vesicle with tumour Foci at 40 X

Case report

A 35-year old previously healthy man was admitted to Urology Department with chronic pain in the left quadrant of the abdomen irradiating to the left lower back. He reported his overall health to be good, with no history of chronic diseases, tobacco or alcohol use, and his family history was not significant.

Systemic examination was unremarkable and was decided to perform MRI of abdomen and pelvis. During evaluation, massive tumor 15x12cm surrounding the cellulose and mesorectal fascia of the left seminal vesicle was revealed on the MRI. Considering the atypical location of the tumor, an additional 18F-FDG PET/CT found a metabolically active

Figure 2: Section of the seminal vesicle with tumour foci CD 99 at 20 X

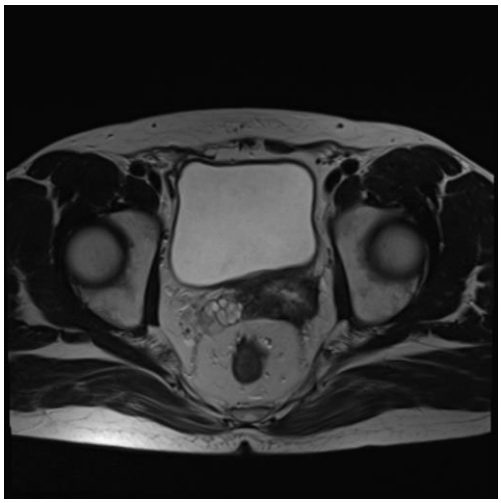

Figure 3: CT pelvis after 6 cycles VAC/IE. In the dynamics tumor regression reached up to 54% RECIST 1.0

neoplasm of the pelvis with no distant metastasis. Based on these data, following prostate and tumor biopsy was performed. Pathological assessment showed signs of sarcoma, (Figure 1) according to the IHC the immunotype corresponded to EWSR1, (Figure 2) but the genetic analysis revealed a translocation EWSR1-Fli1, specific to Ewing sarcoma.

Given the lack of strict recommendations for the management of such patients and the long-term practice of treating conventional Ewing sarcoma, 6 cycles of neoadjuvant chemotherapy under the VAC / IE (VAC) scheme were performed. The main adverse events during chemotherapy were neutropenia grade 4, alopecia grade 2 and fatigue grade 2. In the dynamics, tumor regression reached up to 54% (Figure 3), and it was decided to perform a surgical treatment. The left seminal vesicle with the tumor was extirpated by laparoscopic technical block with the adjacent bladder wall and distal part of the left ureter. Frozen sections showed no signs of infiltration of the prostate or the bladder wall. The left ureter was reimplanted in the bladder dome. The postoperative period was uneventful (Figure 4).

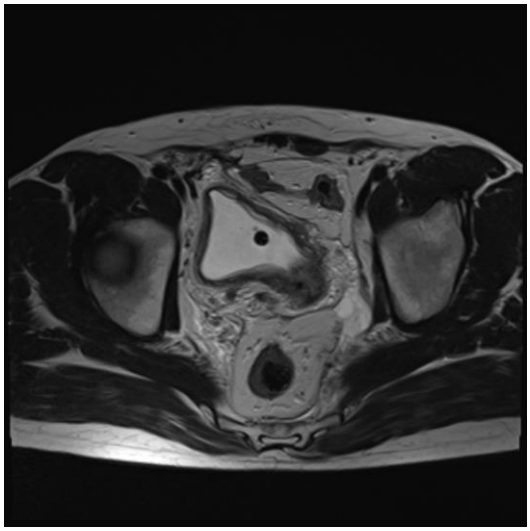

Figure 4: CT pelvis after laparoscopic resection of prostate with seminal vesicle

The histopathology report showed a pathological tumor with the maximum size of 2 cm with negative margins, 18 removed lymph nodes were negative for metastasis. The histological evaluation revealed single-celled islets of the small blue round cell tumor embedded in fibrous tis-sue morphologically similar to the previously studied biopsy of the seminal vesicle tumor, an accumulation of foamy macrophages and hemosiderophages as manifestations of therapeutic pa-thomorphosis. (Figure 5)

The patient was considered fit for adjuvant chemotherapy. Hence, we started adjuvant chemotherapy with VAC / IE scheme (IE block) of the 3-cycle. By this time, the patient has lived 15 months with no data of a relapse.

Discussion

ES are not being the predominant malignant tumors of the urogenitary tract and ac-count only 0.1% cases of prostate tumors [3, 4, and 5]. Extraskeletal Ewing sarcoma is a rare disease with slight male preponderance. The median patient's age is 20 years. About 20% of these tumors occur in the pelvic and hip or the retroperitoneum area [6]. Angervall L. and Enzinger F. (1975) described for the first time Ewing sarcoma was originating from soft tissues [7, 8]. At the same time, Seemayer *et al*.,

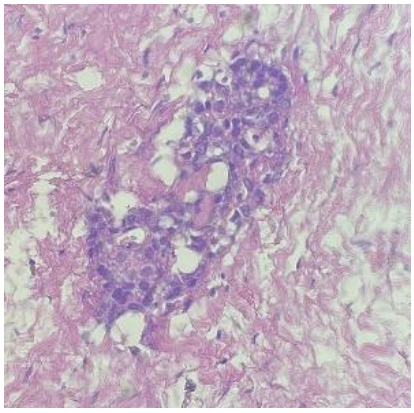

Figure 5: signs of therapeutic pathomorphosis 40 X

(1975) described a peripheral neuroectodermal tumor that was not as-sociated with the structures of the peripheral or sympathetic nervous system [9]. In 1979, Askin F. *et al*., described a malignant small cell tumor of the chest wall (later called the Askin tumor) similar to neuroectodermal tumors, but with a unique clinical pathological profile [10]. With the usage of immunohistochemical, cytogenetic and molecular genetics methods, it became clear that these tumors represent different ends of the same morphological group known as the Ewing tumor family.

Extraskeletal Ewing sarcoma most commonly metastasizes to the lungs and skeleton, and very rarely to lymph nodes [6]. Metastases are often present at the time of first visit. Multiple studies have shown that patients after neoadjuvant chemotherapy with minimal or no residual viable tumor have a significantly better overall survival than with larger amounts of viable tumors [11, 12]. Correct diagnostic is essential for selection optimal treatment therefore such rare tumors should be referred to a specialize relevant clinical centers [13, 14]. Pretreatment evaluation should be based on radiologic examination and needle biopsy of tissue (or fine-needle aspiration cytology) [5]. Intravenous pyelography, bimanual palpation, cystoscopy are valuable for demonstrating dislocation or compression of the ureter and bladder wall.

However, computed tomography will show the tumor's boundaries in relation to the surrounding tissue. Since sarco-mas are known to give early haematogenic spread to the lungs, bones and liver, scans of the up-per abdomen, thorax and skeleton should be made preoperatively [5].

Histology and IHC analysis are cornerstone of the differential diagnosis. The pathology features of typical Ewing's sarcoma include a tightly packed round cell pattern with a rounded nucleus, a pronounced nuclear membrane, fine-grained chromatin, and poorly discernible nucleoli [15]. IHC analysis is a useful tool in the diagnosis and identification of ESFT, especially in the differential diagnosis with other small round cell tumors of bone and soft tissue [15]. Immunohistochemistry with CD99 (a monoclonal antibody recognizing a characteristic glycoprotein) is an essential feature to diagnose NET or Ewing sarcoma [1]. Additionally, some neuro specific markers usually use: synaptophysin, neuron-specific enolase, CD57, S-100[16]. Ewing family tumors are associated with translocation t(11;22)(q24;q12) in 85% of cases. This fusion of Ewing sarcoma gene on 22q12 with the FLI1 gene on 11q24 results in a chimeric fusion transcript EWSR1-FLI1. EWSR1-FLI1 may participate in pathogenesis by promoting at least two sets of events that synergize in tumor development and progression: cell proliferation and survival [15].

In our case, the tumor was represented by solid fields of the small blue round cell tumor with a propensity to form rosettes and foci of necrosis. The immunohistochemical data, with positive expression of vimentin, CD99, CD117; and negative expression of MYF4, TTF1, CD45, CD56, p63, oct3 / 4, PLAP, S100, MCK, synaptophysin, chromogranin, desmin. Ewing sarcoma also was confirmed by the molecular genetic analysis revealing the translocation t (11; 22) (q24; q12).

In early works, Chiou R., Williamson R. reported about aggressive surgery like a combined extirpation of the seminal vesicles, bladder and prostate, but later works (and this case) hold the opinion on the possibility of implementing a modified radical vesiculectomy [13]. Patients with the disease in pelvic sites have significantly poorer survival during 5 years than those with the disease in non-pelvic sites (34% v 57%; $p<0.001$). Among pelvic cases, there was no evidence of survival differing by treatment ($p=0.81$), but among nonpelvic cases, there was strong evidence of survival differing by treatment ($p<0.001$) [11]. In such patients, chemotherapy potentially can eradicate such deposits, and modern treatment plans include chemotherapy usually administered prior to and after local treatment [11, 12, 13]. Therefore, contemporary treatment principles, like in our case, could be appropriate for extraskeletal Ewing's sarcoma.

Conclusion

Data of optimal treatment extraskeletal Ewing sarcoma are obviously limited. Most of the described case's therapy included surgery, which consisted of cystoprostatectomy with pelvic lymphadenectomy in all reported cases. This clinical case is exception in daily practice because surgery was accompanied by organ saving without any local relapse during the follow-up. Surgical approach is the best treatment modality, and new chemotherapy agents are necessary to achieve better results in metastatic disease.

Authors' Contribution

MB: Literature review and preparation of manuscript
AN: Did the literature review and helped in preparation of manuscript
AA: Analysis of pathological data and preparation of manuscript.
VK : Data analysis and preparation of manuscript
SR: Preparation of manuscript

All authors read and approved the manuscript.

Conflict of Interests

The authors declare that there are no conflict of interests

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Consent and Ethics

Written informed consent was obtained from the patient for publication of this case report.

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