Introduction:
Spinal cord injury causes vasoplegia and bradycardia, therefore severely affecting the cardiovascular system. To date, no publication describes the applicability of advanced hemodynamic monitoring in these patients.

Methods:
From March 2017 onwards we conducted a prospective, single center pilot study including all patients with an acute spinal cord injury. We excluded patients that had a preexisting cardiac condition as well as patients suffering from sepsis. Measurements were performed using the PiCCO system (Pulsion, Munich, Germany) at least 3 times a day.

Results:
Until December 2019 25 Patients (mean age 56 ± 20 years, range 18-82) with a total of 337 measurements were included. In 19 Patients the levels of C2 to C7 were affected. Three patients had a lesion of the thoracic level and 3 subjects suffered from lumbar paraplegia. We observed a mean Cardiac Index (CI) of 4.2 ± 1.2 l/min/m², a mean Stroke Volume Index (SI) of 59 ± 15 ml/m² and a mean Systemic Vascular Resistance Index (SVRI) of 1384 ± 443 dyn*s*cm⁻⁵*m². There were 14 Patients requiring norepinephrine on at least one day of measurements. With vasopressors (n=46) we observed a mean CI of 4.1 ± 1.2 l/min/m², a mean SI of 59 ± 16 ml/m² and a mean SVRI of 1317 ± 572 dyn*s*cm⁻⁵*m². Without catecholamines (n=292) we noted a mean CI of 4.2 ± 1.1 l/min/m², a mean SI of 59 ± 15 ml/m² and a mean SVRI of 1394 ± 418 dyn*s*cm⁻⁵*m².

Conclusion:
Our preliminary results do show a difference of the mean SVRI in patients suffering from acute spinal cord injury when compared to the reference range of healthy individuals. Furthermore, the SVRI is reduced in both subjects under vasopressor therapy and patients that did not receive catecholamines. We assume a complex adaptation of the cardiovascular system that can compensate for the loss of vascular resistance in the absence of vasopressors without affecting the cardiac index.