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Title: RISKS FACTORS ASSOCIATED WITH MECHANICAL VALVES THROMBOSIS: THE EXPERIENCE OF SALAM CENTRE FOR CARDIAC SURGERY

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Background & Aims: Mechanical heart valves (MHV) replacement in patients with rheumatic valve disease is common in Africa. MHV requires life-long anticoagulation with vitamin K antagonists (VKA INTAKE AND). Managing this can be difficult in an area with poor health facilities. The Salam Centre for Cardiac Surgery was built by Emergency NGO in Khartoum, Sudan. Since 2007 patients have been offered high-quality free-of-charge medical and surgical treatment for cardiac diseases. Salam Centre performed more than 10000 open heart surgeries, 80% of which for MHV replacement. The study aims to evaluate the characteristics of patients with valve thrombosis (VT) and the associated risks

Methods: From August 2018 until December 2022 we consecutively recorded all VT events. The diagnosis, suspected with transthoracic Echocardiogram (TTE) and confirmed later with fluoroscopy, was done in patients at regular OPD visit, during pregnancy or puerperium, in cases of interruption of VKA therapy lasting more than 30 days or in symptomatic patients. In addition, anamnesis about intercurrent diseases, INR and CBC were collected

Results: During the observation time, 287 VT involving 237 patients were collected. The incidence was 1.35% p/y. Females were 56.9% and median age at the events was 27 years (min 8, max 67). Thirty-five patients (14.8%) had 2 or more episodes of VT. Mechanical valves, all bileaflet, replaced aortic, mitral, mitro-aortic and tricuspid valves in 7.6%, 57%, 35% and 0.4% of patients respectively. INR results were available for 277 events. Median value was 2.2 (min 0.9, max > 12), with 31.7% of INR results lower than 1.7. The time spent in or above range during previous 6 months of therapy was available in 183 cases (63.8%). Median value was 56 (IQR 34-80). The most relevant risk factor was low compliance to VKA therapy: 47 (16.4%) events were related to irregular daily VKA intake and INR check. In 72 cases (25.1%) the patients omitted voluntary VKA for a long time, between 2 weeks to 4 years; in 12 (4.2%) cases the interruption was related to non-cardiac surgery, recent trauma or bleeding. in 55 cases (19.2%) the cause wasn't clear. Finally, a prothrombotic clinical condition was found as major risk factor of VT in 101 cases (35.2%) or as concurrent cause in 14 cases (4.9%). Between these conditions, pregnancy and puerperal status, bacterial or viral (Covid-19) diseases, malaria and hypereosinophilia with or without documented parasite infestation were documented in 43 cases.

Conclusions: Poor compliance to life-long therapy with VKA and its intrinsic difficulty represents the most relevant risk factor for VT. There are many underlying causes, from economic, social and cultural factors to insufficient patient's awareness. Political commitment to offer free INR check, along with patient's education, ought to be improved. Between clinical risk factors, hypereosinophilia represents a chapter that deserves further investigations. Patients with history of VT must be followed by a dedicated clinic that aims to increase patient's loyalty in order to intercept risk factors as early as possible