(Child Health Assessment Questionnaire), ESR). The results obtained in 8 children (4 systemic, 4 non-systemic) who were treated for more than 3 months are available. Mean (SD) age at disease onset was 6.6 (3) years, mean age at treatment was 13 (2.9) years. Four patients (3 non-systemic and one systemic) improved, four patients did not improve (3 systemic and one non-systemic). In conclusion, these preliminary results tend to show that patients with systemic onset JIA respond less to etanercept than patients with non-systemic onset JIA.

1 N Engl J Med 2000;342:763-9.

12 Vasculitis

12.1 A series of childhood microscopic polyangitis and classic polyarteritis nodosa: the significance of ANCA

A BAKKALOGLU, S OZEN, E BASKIN, N, BESBAS, O KASAPÇOPUR, A DUZOVA, F OZALTIN

Department of Paediatric Nephrology and Rheumatology, Hacettepe University, Turkey

We aimed at evaluating the distribution and features of classic polyarteritis nodosa (PAN) and microscopic polyarteritis (MPA) and the importance of antineutrophil cytoplasmic antibody (ANCA) in childhood PAN. Classic PAN was diagnosed by aneurysms on angiography in 10 patients and by the presence of necrotising vasculitis in mid-size arteries in 5, adding to a total of 15 patients. MPA was diagnosed in 10 patients; by characteristic findings in renal biopsy in 6 and by the small and/or medium sized necrotising arteritis in 4. ANCA was studied by indirect immunofluorescence (IIF) and subsequently an ELISA test for MPO.

The mean (SD) ages of the patients with classic PAN and MPA were 11.33 (3.69) and 9.55 (2.94) respectively. None of the patients in the classic PAN group had renal failure. However, 60% of the patients with MPA presented with renal failure and 40% progressed to chronic renal failure. Clinically evident pulmonary renal syndrome was present in 3 of the 10 patients with MPA. IIF for ANCA in classic PAN showed negative staining in 9, mild staining patterns in 6, and one MPO-ELISA was mildly positive. On the other hand, IIF for ANCA in MPA showed very strong p-ANCA staining in 9 and atypical staining in 1. In MPA, the median MPO-ELISA level was 42.5 EU/ml (range 20-250).

In conclusion, treatment of childhood PAN is satisfactory with effective treatment; however, relapses have occurred. ANCA is important for the diagnosis and follow up of MPA.

12.2 Epithelial cell-derived neutrophil activator levels in Henoch-Schönlein purpura in childhood

N BESBAS, F OZALTIN, E BASKIN, A BAKKALOGLU, S OZEN, U SAATÇI

Hacettepe University, Department of Paediatric Nephrology and Rheumatology, Ankara, Turkey

Epithelial cell-derived neutrophil activator (ENA-78) is a recently discovered chemokine, which is one of the most important chemotactic cytokines for neutrophil chemotaxis. Pathogenesis of vasculitis is complex and not yet fully elucidated, but neutrophils play a major part. Henoch-Schönlein purpura (HSP) is also leucocytoclastic vasculitis. ENA-78 was measured by ELISA using samples obtained from 11 patients (10 boys and 1 girl), aged 2.5-17 years (mean (SD) 11 (4.3))

with HSP in this study. Patients were grouped according to renal, intestinal, and joint disease. Mean ENA-78 level was found to be 2832 (1893) ng/ml at the acute stage. Levels of ENA-78 in patients with HSP and renal disease were lower than in those without renal involvement (1793 (1497) ng/ml v 2580 (1646) ng/ml, $p>0.5$). Similarly, patients with joint disease had lower ENA-78 levels than those without intestinal disease (1666 (996) ng/ml v 2732 (1998) ng/ml, $p>0.05$). ENA-78 levels in patients with more than one system affected were lower than in those with one system involved (1343 (248) ng/ml v 3120 (1925) ng/ml, $p>0.5$). However ENA-78 levels were similar in patients with and without intestinal disease. Contrary to expectation, we found lower ENA-78 levels in systemic disease than in those without systemic disease. We speculate that increased tumour necrosis factor α may suppress ENA-78 by downregulating chemokine receptor 2 (CXCR2) in severe cases. Additionally, ENA-78 may be produced locally rather than systemically and may be lost with urine. Further investigation is needed to explain this pathogenesis.

12.3 Familial vasculitis : a new Georgian disease ?

P NAVON-ELKAN, D WACHTEL, J PRESS, S PADEH, D BRANSKI
Paediatric Rheumatology, Shaare Zedek Medical Centre, Jerusalem; Soroka Hospital, Beer-Sheva; Sheba Medical Centre, Ramat-Gan, Israel

Familial vasculitis is rare and only a few families with polyarteritis nodosa (PAN) have been reported. We report here on 2 unrelated families of Georgian-Jewish origin with PAN. *Family 1*—A 7 month old boy presented with painful nodular livedoid rash, anaemia, raised erythrocyte sedimentation rate (ESR), and normal immunological profile. At the age of 14 months he had generalised seizure with right paresis with normal brain computed tomography (CT). Two years later, he deteriorated with right paresis, hypoventilation, and hypertension. Brain CT and magnetic resonance imaging showed thalamic and cerebellar lesions. Renal angiogram disclosed multiple PAN-like aneurysms. One year later, he is doing well receiving oral cyclophosphamide and prednisone. His 5 year old sister has had leg pain, livedoid rash, anaemia, and a raised ESR for 4 years.

Family 2—Two sisters presented at the age of 1.5-2 years with fever, myalgia, livedoid and purpuric rash. Their cousin died in infancy of systemic vasculitis with cerebral haemorrhage and mesenteric aneurysms on angiogram.

As opposed to other reports of familial vasculitis, our group was uniformly Georgian-Jewish and if enough probands are identified, we will be able to look for genetic markers. Familial atrophic blanche has been reported by Suster (1986) in 4 Georgian-Jewish adolescents who had recurrent refractory leg ulcers but no systemic features of vasculitis.

12.4 Multicentre data collection of 250 patients

F FALCINI*, F ZULIAN†, P PICCO‡, MS STRADELLA‡, G MARTINI‡, G SIMONINI*, GB CALABRI*, R CIMA‡

*Department of Paediatrics, *Florence, †Padua, ‡Genova, §Milano, Italy*

The epidemiology of Kawasaki disease (KD) varies in different countries, and genetic factors may have an influence on disease expres-

sion. We have retrospectively reviewed the charts of 250 white patients with KD seen in tertiary referral hospitals of northern Italy and followed up for a mean period of 3 years (range 1-120 months). The male:female ratio was 1.8:1. Mean age at diagnosis was 37 months. Fever lasted for a mean period of 9 days; in most of the cases the erythrocyte sedimentation rate (ESR) was performed during this period, with a mean value of 76 mm/1st h. Other laboratory findings included mean IgG and IgM values of 8.27 and 1.48 g/l, respectively, and thrombocytosis (mean platelet count $430 \times 10^9/l$). Only one patient had a low platelet count ($15 \times 10^9/l$ at the 8th day of illness). Clinical criteria reported (in decreasing order) were rash (221/246), oral mucosal alterations (219/245), conjunctivitis (208/245), extremity changes (185/246), and lymphadenopathy (176/246). About a third of the patients fulfilled all criteria. Most of our cases (196/250) were treated with IV immunoglobulin, from day 1 to day 51 of illness (mean day 8). Coronary aneurysms were reported in 40 patients (22 male, 18 female). Their mean age was 29 months (range, 3-112). Mean fever duration and ESR value in these patients were no different from those of the whole group. IV immunoglobulin had been given in 35/40 patients with coronary aneurysms, no later than in the whole group. Other complications included pericardial effusions (37 cases), abdominal pain/diarrhoea (11), arthritis (10), hydrops of the gall bladder (6), myocardial infarction (5), cardiomyopathy (5), DIC (1), hemiparesis (1).

A statistical model to evaluate possible risk factors for coronary aneurysms in this large cohort is currently being tested.

12.5 Role for vascular endothelial growth factor in Henoch-Schönlein purpura

R TOPALOGLU, N BESBAS, A SUNGUR, E BASKIN, S OZEN, U SAATÇI A BAKKALOGLU
Departments. of Paediatric Nephrology and Rheumatology and Pathology, Hacettepe University, Ankara, Turkey

Vascular endothelial growth factor (VEGF) is a multifunctional growth factor. It increases vascular permeability, interstitial collagenase production, von Willebrand factor release, and enhanced procoagulant activity. Henoch-Schönlein purpura (HSP) is the most common small vessel vasculitis in childhood, which is the result of a complex series of inflammatory and immunological processes. We aimed at investigating the possible role of VEGF in the pathogenesis of HSP. Thirty four children with HSP were enrolled in the study and 10 age matched healthy children served as controls. Plasma VEGF levels were determined by ELISA. VEGF expression was evaluated by immunohistochemistry within the vasculitic lesion as well as the non-affected skin and in skin specimens after resolution of the disease. Mean (SD) plasma VEGF levels were significantly higher during the acute phase (407.8 (64.92)) than during the resolution phase (202.17 (26.6), $p<0.002$) and higher than in healthy controls (135 (22.8), $p<0.001$). Further analysis of data showed a correlation with erythrocyte sedimentation rate, C reactive protein, and white blood cell (WBC) count. VEGF expression by the vascular bed was more intense in resolving lesions than in acute vasculitic lesions

($p < 0.05$). Our results suggest that as a potent permeability, chemotactic, and migratory factor, VEGF may play a crucial part in the morphological and functional changes of the endothelial cells and inflammatory reactions in HSP.

12.6 Update on paediatric Behçet's disease in France

I KONÉ-PAUT*, A GORCHAKOFF*, B WESCHLER†, JM GARNIER*, I TOUITOU‡

*Department of Paediatrics, CHU NORD, Marseille, Department of Internal Medicine; †Hôpital Pitié Salpêtrière, Paris, Laboratory of Genetics; ‡Hôpital A. de Villeneuve, Montpellier, France

Aim—To assess the number of paediatric cases of Behçet's disease (BD) recruited in France.

Patients and methods—A retrospective and prospective chart review of BD in children recruited from the main medical centres in France since 1993. A specific questionnaire and database were used for the collection of information and data analysis.

Results—48 children met the international criteria for BD¹ before the age of 16 years. 26 were male; 22 were female (SR 1.18). Their ethnic distribution was 29 white subjects, 10 Moslems, 5 Turkish, 3 black Africans, and one Asian. The mean age of attaining criteria was 11 years (median 12). Clinical features were oral aphthosis (100%), genital ulcers (63%), cutaneous signs (44%), arthralgia (32%), arthritis (10%) with sacroiliitis in 3 cases, ocular signs (21%) with uveitis (12%), headaches (21%), other neurological sign (10%), digestive symptoms (22%), and venous thrombosis (10%). Familial history of completed BD: 4 patients from 4 families; of BD related symptoms in 37 from 8 families. In addition to these ascertained cases, we retrieved 13 other patients from 6 families who fulfilled at least 2 of the international criteria, with oral aphthosis in all cases. The onset was definitely before 16 years for 5 of them and only probably before in the other 8 in whom the chronology of these symptoms was not clearly specified.

Discussion—The number of our registered cases is much more higher than in our preliminary survey of 1993 (17 cases). Moreover, arthritis and cutaneous signs seem to be less common in this larger group of patients. This new aspect of paediatric BD in France resembles that of Fujikawa *et al* and Picco *et al*. The apparently increased frequency of paediatric BD in France probably reflects an increased awareness of paediatricians about it.

1 Lancet 1990.

12.7 Acute surgical onset of Kawasaki disease

F ZULIAN*, L ZANCAN*, F FALCINI†, MS STRAFELLA*, G MARTINI*, E VANIN*

Department of Paediatrics, *University of Padua and †Florence, Italy

Gastrointestinal disease is quite common in Kawasaki disease (KD) and usually resolves without surgical intervention. We present a series of 9 children with acute surgical onset of KD.

Nine children (7 male, 2 female), among a cohort of 205 with KD followed up by two tertiary care hospitals, had their onset with

severe abdominal complaints. Age at onset was higher than for the other patients with KD: 7/9 (78% *v* 17% in general KD group) were aged more than 5 years, 1/9 (11% *v* 20% in KDs) was < 2 months. Acute surgical symptoms at onset were vomiting and abdominal pain in 8/9, jaundice 5/9, hepatosplenomegaly 2/9, haematemesis 1, toxic shock syndrome with admission in ICU 2/9. Furthermore, 2/9 had only fever, 5/9 had 2 criteria (fever and lymphadenopathy or skin rash), 2 presented the required diagnostic criteria for KD. Thereafter, by 2 to 5 days from surgical intervention, all the patients satisfied the diagnostic criteria. All patients needed surgical intervention: 6 had laparotomy (2 appendectomy, 2 cholecystectomy), 2 had percutaneous transhepatic biliary drainage, 1 had gastrointestinal endoscopy for acute haematemesis.

The postoperative diagnosis was gallbladder hydrops with obstructive cholecystitis in 4/9, functional obstruction of small intestine secondary to paralytic ileus in 3/9, appendicular vasculitis with peritonitis in 1, duodenal vasculitis in 1. All patients completely recovered, 5/9 (56%) presented coronary aneurysms even if IV Ig were given by 5 to 12 days from the onset of fever.

Acute surgical onset, in our experience, accounts for 4.4% of patients with KD. It represents the expression of more aggressive and incomplete forms. Gallbladder hydrops with obstructive cholecystitis was the most common feature. Appendicitis in children who are too young, unusual hepatosplenomegaly, and febrile haematemesis can help in the differential diagnosis, but often this cannot prevent surgical intervention.

12.8 Henoch-Schönlein purpura: successful treatment with intravenous methylprednisolone pulses

V PANAUVIEN, A GARKAUSKIEN, M JAKUTOVI

Vilnius University Children's Hospital, Vilnius, Lithuania

Henoch-Schönlein purpura is an acute leucocytoclastic vasculitis that primarily affects children.

We present the clinical features of 90 children with Henoch-Schönlein purpura and treatment of this disease. The dominant clinical features of Henoch-Schönlein purpura were cutaneous purpura (100%), arthritis (51%), abdominal pain (35%), gastrointestinal bleeding (11%), and nephritis (8%). Patients were treated with oral corticosteroids or high dose intravenous pulse methylprednisolone. Disease course, outcome, and recurrences during 1–5 years were evaluated.

Our results indicate that oral corticosteroid treatment is less effective during the active phase of disease and does not prevent recurrences as compared with high dose intravenous methylprednisolone. Such treatment is especially effective for the acute course of the disease and no side effects are seen during the treatment.

Conclusion—Treatment with high dose intravenous pulse methylprednisolone may be beneficial in patients with acute Henoch-Schönlein purpura.

12.9 Post-streptococcal vasculitis in childhood presenting with fever and muscular pain

M HOFER*1, G RIVIER*, P-A GUERNE*, J BRUNNER*, S HANQUINET†, J-J CHESEAU*, E GIRARDIN*

*Consultation Multisite Romande de Rhumatologie Pédiatrique, Departments of Paediatrics, University Hospital of Geneva and Lausanne, †Department of Radiology, University Hospital Geneva

Fever and inflammatory manifestations of the musculoskeletal apparatus suggest a systemic disease. We report the case of a 4 year old child who presented with a systemic form of juvenile idiopathic arthritis with minor articular disease, positive antinuclear antibody (1/640), and raised antistreptolysin antibodies (ASLO 1200 U/ml). With steroid treatment, the clinical course was favourable, but he presented 3 relapses as steroids were tapered, and responded to increased prednisone doses. Clinically, the 2 last relapses presented with incapacitating muscle pain, in particular of the calf, without articular disease. Magnetic resonance imaging of the calves showed hypersignals in streak bands of the muscles irrespective of the muscular territories. The muscle biopsy showed a non-necrotising segmentary vasculitis without signs of myositis, which in the presence of raised ASLO, suggested a diagnosis of post-streptococcal vasculitis. The patient responded well to intravenous methylprednisolone followed by oral steroids and penicillin prophylaxis.

3 other cases of post-streptococcal vasculitis (age at onset 9–15 years) were seen at our clinic. They presented after a sore throat with fever, incapacitating muscle pain of the calf, raised inflammatory variables, and increased ASLO (747–5634 U/ml). They improved with steroids and received a penicillin prophylaxis (6 months to a few years). One patient relapsed a few months after prophylaxis was stopped, but responded well to treatment.

Incapacitating inflammatory myalgias should suggest a diagnosis of post-streptococcal vasculitis. A recent sore throat and raised ASLO will help to direct the diagnosis, which may be confirmed by a muscle biopsy, if necessary. Early treatment is desirable because of the good response and to prevent complications.

12.10 Venous involvement in a case of Takayasu's disease

M LAZZERINI, A TOMMASINI, I BRUNO, E BARBI, L LEPORE

Department of Paediatrics, IRCCS Burlo Garofolo, University of Trieste, Italy

We report the case of a 20 year old girl whose clinical history began with torticollis-like pain and painful mastication. After 3 months she presented persistent fever and raised erythrocyte sedimentation rate (ESR, 120 mm/1st h), C reactive protein (CRP, 1.2 mg/l), and complement (C3 226, C44). Clinical examination showed a tender cord extending along the medial margin of the left SCM muscle and a bilateral carotid murmur. An echo Doppler examination of neck vessels showed a stenosis and an angio-computed tomography (CT) scan showed a concentric stenosis of common carotids, and a minor involvement of the first part of the ascending aorta. No alterations on echocardiography, ECG, chest radiogram, and fundus oculi.

The Mantoux reaction was negative. For the probable diagnosis of Takayasu's arteritis she was given methylprednisolone 60 mg/d and methotrexate 15 mg/week, with a good, but transient, clinical response. One month later she presented with fever and some migrating reddened, warm and tender cords extending along the superficial veins of the arms and legs. She presented also a grade III murmur at the cardiac apex. ESR was 80 mm/1st h and CRP was 15 mg/l. A cutaneous biopsy showed a picture of lymphomonocytic phlebitis with activated T cell infiltration and some giant cells. She was given calciparin 15 000 IU/d and subsequently a pulse of cyclophosphamide (1 g IV). After 20 days of clinical remission she relapsed again with fever, multiple phlebitis, cardiac murmur, bilateral brachial murmur, abdominal pain. The angio-CT scan showed a 4 cm long parietal thickening of the abdominal aorta. Now she is receiving steroids and daily cyclophosphamide, with partial control of her symptoms. We presented this case for its unusual venous involvement. To our knowledge venous involvement was described only in two previous reports by Boissonnas A (1977) and Bardi K (1988). In those cases phlebitis occurred before or without arteritis. In our case the venous histopathological picture, with lymphocytic infiltration and giant cells and the absence of other risk factors (antiphospholipid antibodies, lupus anticoagulant, disorders of coagulation), suggested that phlebitis may be a venous localisation of Takayasu's disease.

13 Allied health professionals

13.1 Diagnosis of mandibular condyle abnormalities in children with juvenile idiopathic arthritis

PN SYNODINOS, O VOUGIOUKA, M MAKOU, D KARAMALIKI, MN SPYROPOULOS

Department of Orthodontics, School of Dentistry, University of Athens; Paediatric Rheumatology Clinic, Children's Hospital "Aglaia Kyriakou", Athens, Greece

The temporomandibular joint (TMJ) is commonly found to be affected in patients with juvenile idiopathic arthritis. Among the currently available TMJ imaging techniques, corrected sagittal tomography (CST) provides the most accurate information for the osseous components of the TMJ. Panoramic radiography (PR), though not as accurate a technique, still has its place in the diagnostic process, as a screening method.

Aim—The evaluation of PR as a diagnostic means in cases of condylar abnormalities, in comparison with CST.

Subjects and methods—30 juveniles attending the Orthodontic Department of the University of Athens, 15 of whom were patients with juvenile idiopathic arthritis of the polyarthritic type. All radiographs of the same type were taken by the same operator, using the same machine. CSTs and PRs were examined separately and in random order, by two examiners. The method error was assessed, re-examining 10 radiographs of each group. Condyles were evaluated for the gross presence or absence of flattening, erosion, osteophytes, subchondral sclerosis, and also their symmetry as regards their counterpart. **Results and conclusions**—The intra- and inter-examiner agreement for both techniques was found to be higher than 90% and 85% respectively. For the detection of erosion,

flattening, and sclerosis of the condyles, the results between the two techniques were not found to be different at a statistically significant level. No conclusions could be made for osteophytes as only a few were seen. The observed disagreement, at the level of $p < 0.1$, for the asymmetry between right and left condyles of the same patient, was attributed to the inability of the PR to guarantee an individualised view for every TMJ.

The PR was found to be a satisfactory method for an initial gross evaluation of the condylar condition and therefore should be carefully assessed in every case.

13.2 Is range of movement a measurable component of function in children with active juvenile idiopathic arthritis?

H EPPS

Department of Rheumatology, UCLH, London, UK

Introduction—Many indicators of disease activity are based on joint counts. These may ignore important functional differences between joint movements. Yet physical function forms the basis of numerous rehabilitative regimens for children with juvenile idiopathic arthritis (JIA). These measures may not truly reflect functionally important gains or deterioration in range of movement (ROM). This study aimed at determining if ROM is a measurable component of function in the paediatric JIA population.

Methods—Excepting specific phalangeal joints, the 56 movements assessed replicated those used for joint counts in JIA. The list was divided into 2 tables; upper limb/neck and trunk/lower limb movements. Six occupational therapists, 21 physicians, 3 specialist nurses, and 22 physiotherapists working in paediatric rheumatology were asked to rank order movements from 0 least important to 5 essential when associated with key functional activities in children with JIA. Movements were then weighted accordingly. A Childhood Health Assessment Questionnaire (CHAQ) was completed and actively assisted ROM measured with a standard goniometer in the first 23 subjects with active JIA (age 6–15) recruited into a hydrotherapy trial.

Results—A global ROM scale with a maximum score of 100 was calculated for each subject $GROM = W \text{ (weights)}/100$. $R \text{ (ROM)}/O \text{ (normative ROM for age)}$. W . Correlations were only significant for weighted ROM and CHAQ scores ($r = -0.45$, $p < 0.05$).

Discussion—It would appear that the GROM score correlates with function and could be used to determine functional change in children with JIA. The results imply that small losses of ROM at particular joints may be clinically significant and should be considered in functional outcomes.

Conclusion—The GROM appears to be a valid measure for detecting functional change in children with active JIA. It could be used in conjunction with other functional measures to determine outcomes of rehabilitation. Future reliability and sensitivity studies are planned and item reduction is being considered for ease of administration.

ARC Funded.

13.3 Introducing an arthritis school for children with juvenile idiopathic arthritis and their parents

H GYLDENLØVE, O KRISTENSEN, A CASPERSEN, M THASTUM, A STOKBRO, H KASPERSEN, K HULD, OR HANSEN, T HERLIN

Department of Paediatrics, Aarhus University Hospital, Aarhus, Denmark

The aim was to improve the knowledge, understanding, and coping of their disease in children with juvenile idiopathic arthritis (JIA) and their parents and to develop relations between children and parents, respectively.

Children with JIA were divided into three "classes" with 5–7 children in each and with the age range of 6–8, 8–10, and 10–12 years, respectively. The school programme was run for one year with three month intervals. Separate, multidisciplinary sessions for parents and children were held.

On the first course the children talked to the nurse and psychologist learning about JIA. Each child presented his/herself, making a drawing of themselves, talking about having arthritis and about managing pain. During the next visits the children saw the occupational therapist (OT) in our experimental kitchen and examined different helping facilities and made a cake together. They had classes with the physiotherapist learning about the principles of physiotherapy and took part in group activities in the gym. Finally, the nurse and OT ran classes about how to manage in a normal school with arthritis. Concurrently, the parents had classes with the psychologist, physiotherapist, occupational therapist, social worker, and paediatric rheumatologist.

The course was assessed by questionnaires. Most parents gave meeting other parents in the same situation a high value. They felt the course was inspiring and recommendable for other arthritis families. All children found the courses most exciting and were eager to meet and talk about their disease and some, with help from the psychologist, even learnt from each other how to manage painful situations (blood tests).

13.4 Hydrotherapy or land based exercises: a patient satisfaction survey

JM SCOTT, HE EPPS

Department of Rheumatology, Birmingham Children's Hospital, Steelhouse Lane, Birmingham B4 6NH, UK

Introduction—Hydrotherapy has long been a treatment of choice for children with arthritis even though there is little research to support its efficacy. This survey aimed at evaluating the subjective opinions of patients and their parents of their exercise treatment.

Method—15 patients with a mean age of 12.5 years (range 6–18) and their parents received a semi-structured telephone questionnaire. This had previously been piloted and adjusted to be suitable for this age group. All the patients attended weekly after-school hydrotherapy groups appropriate to their age and had been given land based exercises in the physiotherapy gym or at home.

Results—80% of the patients interviewed had juvenile idiopathic arthritis (JIA) and the remaining 20% had other rheumatological conditions. 93% of the patients had liked hydrotherapy while only 40% said they liked land based exercises. 73% of patients felt bet-